UNIVERSITY OF MADRAS

THE

CALENDAR FOR 1948-49

VOLUME II

STATUTES, ORDINANCES, REGULATIONS, SYLLABUSES, TEXT-BOOKS, ETC., FOR EXAMINATIONS IN ARTS, SCIENCE, AND FOR ORIENTAL TITLES.

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THE CALENDAR FOR 1948.

JULY		
1	Th	*Half-yearly closing of Bank Accounts* (Holiday). **Agra University incorporated, 1927.**
2	F	Last day for submission of thesis for the Examination for the Diploma in Economics.
3	S	
4	**Sun**	
5	M	Last day for receiving attendance certificates for B.S.Sc. Part II and Diploma in Tuberculosis Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I, B.Sc. (Hons.) Part II (Subsidiary), B.T., B. Com., B.O.L. (Pass) and B.O.L. (Hons.) Part I Examinations.
6	Tu	
7	W	
8	Th	
9	F	
10	S	Last day for receipt of applications for Research Studentships and Fellowships. Examinations for the Diploma in Economics, Politics and Public Administration and Statistics.
11	**Sun**	
12	M	
13	Tu	
14	W	
15	Th	M.L., B.S.Sc. Part II and Diploma in Tuberculosis Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for F.L., B.L., Intermediate (Nursing), B.Sc. (Nursing) and for all the Diplomas in Medicine and Surgery Examinations (except Diploma in Tuberculosis); and for the **Convocation.** Last day for receiving attendance certificates for all the Diplomas in Medicine and Surgery Examinations (except Diploma in Tuberculosis).
16	F	
17	S	
18	**Sun**	**University of Bombay incorporated, 1857.**
19	M	
20	Tu	
21	W	
22	Th	**University of Mysore incorporated, 1916.**
23	F	
24	S	*Penultimate Saturday* (Holiday).
25	**Sun**	
26	M	Publication of results of B.V.Sc. (N.R.) Final Examn.
27	Tu	
28	W	
29	Th	
30	F	
31	S	Last day for receipt of applications with Treasury receipts for exemption from the production of attendance certificates for Entrance Tests (for O.T. and Inter. Gr. D.) Examinations from private candidates and for O.T., Inter. Gr. D. & B.O.L. (Pass & Honours) Examinations from *bona fide* teachers.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

AUGUST

1	**Sun**	Last day for receipt of reports from Colleges on the subjects and courses in which classes had not been opened for want of students.
2	M	**The Utkal University incorporated, 1943.**
3	Tu	
4	W	
5	Th	Last day for the submission of Return of Staff as on 1st August.
6	F	
7	S	*Ramzan* (Holiday).
8	**Sun**	
9	M	Publication of results of B.S.Sc. (Part II) and Diploma in Tuberculosis Examinations.
10	Tu	
11	W	
12	Th	
13	F	
14	S	
15	**Sun**	*Independence Day.* *Assumption Day.*
16	M	Last day for receiving attendance certificates for Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I and Part II Subsidiary, B.T., B. Com., B. O. L. (Pass) and B. O. L. (Honours) Part I Examinations. Publication of results of the Examinations for Diplomas in Economics, Politics and Public Administration and Statistics.
17	Tu	
18	W	
19	Th	*Avani Avittam* (Holiday).
20	F	
21	S	*Penultimate Saturday* (Holiday).
22	**Sun**	
23	M	
24	Tu	
25	W	
26	Th	
27	F	*Janmastami* (Holiday).
28	S	*Sri Jayanti* (Holiday).
29	**Sun**	
30	M	
31	Tu	Last day for receipt of applications for registration for M.Sc., M.Litt. and Ph.D., Degrees and for receipt of applications and theses for M.Sc., M.Litt., Ph.D., D.Litt., D.Sc., LL.D., and M.O.L. Degrees.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

SEPTEMBER

1	W	Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I, B.O.L. (Pass) Part I., B.O.L. (Hons.) Part I, B.Com. and B.T. Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for the B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations. Last day for receiving applications for pass certificates of Inter. Examination of March 1948.
2	Th	
3	F	
4	S	Inter. Group D, Part III and B.O.L. Part II (Revised) Examinations.
5	**Sun**	**University of Madras incorporated, 1857.**
6	M	*Vinayaka Chathurthi* (Holiday).
7	Tu	Publication of results of M.L. Examination.
8	W	**The Indian Universities' Act of 1904 came into force in the University of Madras, 1904.**
9	Th	
10	F	Last day for receiving attendance certificates for F.L. and B.L. Examinations.
11	S	
12	**Sun**	
13	M	
14	Tu	
15	W	*Onam* (Holiday). Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.V.Sc (O.R.) Final Examination. Last day for receiving attendance certificates for the B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations.
16	Th	
17	F	
18	S	*Penultimate Saturday* (Holiday).
19	**Sun**	
20	M	
21	Tu	
22	W	
23	Th	
24	F	
25	S	F.L. and B.L. Examinations.
26	**Sun**	
27	M	
28	Tu	
29	W	
30	Th	Last day for receipt of applications with Treasury receipts for exemption from *bona fide* teachers to appear for Matric., Inter., B.A. and M.A. Degree Examinations and from other private candidates for Matric. Examination, March, 1949.

Note:—The date of commencement of all examinations and time-tables in detail as finally fixed will be published in the *Gazette* in the preceding August.

OCTOBER

1	F	**University of Patna incorporated, 1917.** Last day for receiving attendance certificates for B.V.Sc. (O.R.) Final, Intermediate (Nursing) and B.Sc. (Nursing) Examinations. B.V.Sc. (N.R.) & (O.R.) Prely. and Inter. Examinations. Last day for receipt of Hostel Returns and Reports of Medical inspections from Colleges.
2	S	*Mahalaya Amavasai* (Holiday).
3	**Sun**	
4	M	
5	Tu	Publication of results of Inter., B.A., B.A. (Hons.) Prely., B.Sc., B.Sc. (Hons.) Part I and Part II (Subsidiary), B.O.L. (Pass.), B.O.L. (Honours) Part 1, B.Com. and B.T. Examinations.
6	W	
7	Th	**Osmania University incorporated, 1918.**
8	F	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Pre-Registration, First, Second and Final M.B. & B.S. and B.Sc. (Pharmacy) Prely. and Final Examinations.
9	S	
10	**Sun**	*Ayudha Puja.*
11	M	*Ayudha Puja* (Holiday).
12	Tu	*Ayudha Puja* (Holiday).
13	W	
14	Th	*Bakrid* (Holiday).
15	F	**University of the Punjab incorporated, 1882.** B.V.Sc. (O.R.) Final, Intermediate (Nursing), B.Sc. (Nursing) and all the Diplomas in Medicine & Surgery Examinations (except Diploma in Tuberculosis). Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. Part II Examination.
16	S	
17	**Sun**	
18	M	
19	Tu	
20	W	
21	Th	
22	F	
23	S	*Penultimate Saturday* (Holiday).
24	**Sun**	
25	M	
26	Tu	
27	W	
28	Th	
29	F	**The Madras University Amendment Act of 1929 came into force.**
30	S	*Deepavali* (Holiday).
31	**Sun**	Last day for receipt of applications from institutions for recognition, affiliation or approval in any University course or courses from the following academic year.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

NOVEMBER

1	M	**University of Travancore incorporated, 1937.** Last day for receipt of applications for scrutiny for purposes of appearing for the Matriculation Examination. Publication of results of B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations.
2	Tu	
3	W	
4	Th	
5	F	
6	S	
7	**Sun**	
8	M	Publication of results of F.L., B.L. and B.V.Sc. (O.R.) Final Examinations.
9	Tu	
10	W	Last day for receiving attendance certificates for B.S.Sc. Part II Examination.
11	Th	
12	F	*Muharram* (Holiday).
13	S	
14	**Sun**	
15	M	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Entrance Tests, O.T., B.O.L. (Pass and Honours), Sangita Siromani, B.V.Sc. (N.R.) Final, Diploma in Tuberculosis and Diploma in Journalism Examinations. Publication of results of Examinations for all the Diplomas in Medicine and Surgery (except Diploma in Tuberculosis), Intermediate (Nursing) and B.Sc. (Nursing).
16	Tu	**University of Allahabad incorporated, 1887.**
17	W	
18	Th	
19	F	
20	S	*Penultimate Saturday* (Holiday). Last day for receiving attendance certificates for First, Second and Final M.B. & B.S. Examinations. B.S.Sc. Part II Examination.
21	**Sun**	
22	M	
23	Tu	
24	W	
25	Th	
26	F	
27	S	
28	**Sun**	
29	M	
30	Tu	

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

DECEMBER

1	W	**Publication in the Gazette of India in 1904, of the Chancellor's Declaration that the Body Corporate of the University of Madras had been constituted in accordance with the provisions of the Indian Universities Act, 1904.** Last day for receipt of applications for the Diploma Courses in Tuberculosis and Journalism. **University of Rangoon and Muslim University, Aligarh incorporated, 1920.** Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. (Part I) Examination. Last day for receiving attendance certificates for Pre-Registration, B.Sc. (Pharmacy) Prely. and Final and B.V.Sc. (N.R.) Final Examinations. First, Second and Final M.B. & B.S. Examinations.
2	Th	
3	F	
4	S	
5	**Sun**	
6	M	
7	Tu	
8	W	
9	Th	
10	F	Pre-Registration and B.Sc. (Pharmacy) Prely. and Final Examinations.
11	S	**University of Lucknow incorporated, 1920.**
12	**Sun**	
13	M	
14	Tu	
15	W	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Matriculation, B.A. (Hons.) Final, and B.Sc. (Hons.) Part II (Main subjects) and M.A. Examinations. B.V.Sc. (N.R.) Final Examination.
16	Th	
17	F	
18	S	*Penultimate Saturday* (Holiday).
19	**Sun**	
20	M	Publication of results of First, Second and Final M.B. & B.S. & B.S.Sc. Part II Examinations.
21	Tu	
22	W	
23	Th	
24	F	
25	S	*Christmas Day* (Holiday).
26	**Sun**	
27	M	
28	Tu	
29	W	
30	Th	
31	F	(Holiday).

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

THE CALENDAR FOR 1949[a]

JANUARY

1	S	**New Year's Day.** (Holiday). **Annamalai University, incorporated, 1929.**
2	Sun	
3	M	
4	Tu	
5	W	Last day for receiving attendance certificates for B.S.Sc. (Part I) and Diploma in Tuberculosis and Diploma in Journalism Examinations. Publication of results of Pre-Registration and B.Sc. (Pharmacy) Prely. and Final Examinations.
6	Th	
7	F	
8	S	
9	Sun	
10	M	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Inter., B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I and Part II (Subsidiary) and B.Com. Examns.
11	Tu	*Vaikunta Ekadesi* (Holiday).
12	W	*Meladi Nabi* (Holiday).
13	Th	*Bhogi Pongal* (Holiday).
14	F	*Pongal* (Holiday).
15	S	B.S.Sc. Part I, Diploma in Tuberculosis and Diploma in Journalism Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for F.E., B.E., B.Sc.Ag., B.Sc. (Tech.), B.T., M.Ed., F.L., B.L., M.L., Pre-Regn., First, Second & Final M.B. & B.S., M.D., M.S., B.Sc. (Pharm.) Prely. & Final, Intermediate (Nursing), B.Sc. (Nursing), all Diplomas in Medicine & Surgery (except Dip. in Tuberculosis), Dip. in Economics, Dip. in Indian Music, Dip. in Geography, Dip. in Librarianship, Dip. in Politics & Public Admn., & Certificate & Dip. in Anthropology Examinations & for Examinations for the Certificates & Diplomas in French & German; & for the **Convocation.** Last day for receiving attendance certificates for M.D., M.S., & for all the Diplomas in Medicine & Surgery Examinations (except Dip. in Tuberculosis).
16	Sun	**University of Calcutta incorporated, 1857.**
17	M	
18	Tu	
19	W	
20	Th	
21	F	
22	S	*Penultimate Saturday* (Holiday).
23	Sun	
24	M	Publication of results of B.V.Sc. (N.R.) Final Examn.
25	Tu	
26	W	**Andhra University incorporated, 1926.**
27	Th	
28	F	
29	S	
30	Sun	
31	M	Last day for receipt of applications for registration for M.Sc., M.Litt. and Ph.D. Degrees and for receipt of applications and theses for the M.Sc., M.Litt., Ph.D., D.Litt., D.Sc., LL.D. and M.O.L. Degrees

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

(*a*) Holidays noted for the year are subject to alteration consequent on the publication of Holidays by the Government.

FEBRUARY

1	Tu	Last day for receiving applications for pass certificates of Intermediate Examination of September 1948.
2	W	
3	Th	
4	F	
5	S	
6	**Sun**	
7	M	Publication of results of B.S.Sc. Part I Examination.
8	Tu	
9	W	
10	Th	
11	F	
12	S	
13	**Sun**	
14	M	
15	Tu	Publication of results of Diploma in Tuberculosis and Diploma in Journalism Examinations.
16	W	
17	Th	
18	F	
19	S	*Penultimate Saturday* (Holiday).
20	**Sun**	
21	M	
22	Tu	
23	W	
24	Th	
25	F	*Mahasivarathri* (Holiday).
26	S	
27	**Sun**	
28	M	**Madras University Act VII of 1923 received the assent of the Governor of Madras.** Last day for receipt of applications with Treasury receipts from *bona fide* teachers for exemption to appear for the Inter. and B.A. Degree Examinations of September 1949.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

MARCH

1	Tu	Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. Part I, B.V.Sc.(N.R.) and (O.R.) Prely. and Inter. Examinations.
2	W	*Ash Wednesday* (Holiday).
3	Th	
4	F	
5	S	
6	**Sun**	
7	M	
8	Tu	
9	W	Last day for receiving attendance certificates for Matriculation, Intermediate, B.A., B.A. (Hons.) Preliminary and Final, M.A., B.Sc., B.Sc. (Hons.), B. Com., O.T., B.O.L. (Pass and Honours), F.E. and B.E. and Sangita Siromani Examinations.
10	Th	
11	F	
12	S	
13	**Sun**	
14	M	
15	Tu	Last day for receiving attendance certificates for B.V.Sc.(N.R.) and (O.R.) Prely. and Inter. Examns. Last day for receipt of applications with Treasury receipts in the Registrar's Office for the Examination for the Diploma in Statistics.
16	W	
17	Th	
18	F	
19	S	*Penultimate Saturday* (Holiday). Last day for receiving attendance certificates for B.T., M. Ed., B.Sc. Ag., B. Sc. (Tech.), and Diploma in Economics Examinations.
20	**Sun**	Last day for receiving attendance certificates for Pre-Registration, First, Second and Final M.B. & B.S., B.Sc. (Pharmacy) Prely. and Final Intermediate (Nursing) & B.Sc. (Nursing) Examinations.
21	M	Matriculation, Inter., B.A., B.A. (Hons.) Prely. and Final, M.A., B.Sc., B.Sc. (Hons.) (Part I and Part II Main), B. Com., F.E., B.E., B.O.L. Pass Part I, B.O.L. (Honours) Parts I & II and Sangita Siromani and Inter. Group D. Entrance Test Examinations. **The Indian Universities' Act, 1904, received the assent of the Governor-General.**
22	Tu	
23	W	**University of Dacca incorporated, 1920.**
24	Th	
25	F	
26	S	
27	**Sun**	
28	M	O.T. Prely. and B.O.L. Part II Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for the B.V.Sc. (O.R.) Final Examination.
29	Tu	**Madras University Act VII of 1923 received the assent of the Governor-General.**
30	W	*Telugu New Year's Day* (Holiday).
31	Th	Last day for submission of Field Work Records for the Examination for the Diploma in Geography.

Note—The dates of commencement of all examinations, and time-tables in detail as finally fixed will be published in the *Gazette* in the preceding February.

Practical Test for deferred candidates for B.T. will be held in the first week of March.

2

APRIL

1	F	**Benares Hindu University incorporated, 1916.** B.T., M.Ed., Pre-Registration, First, Second and Final M.B. & B.S., First and Second B.Sc. (Ag.), B.Sc. (Tech.) Part I, B.V.Sc. (N.R.) and (O.R.) Prely. and Inter., B.Sc. (Pharmacy) Prely. and Final, Intermediate (Nursing), B.Sc. (Nursing), M.D., M.S., and all Diplomas in Medicine & Surgery Examinations (except Diploma in Tuberculosis). Last day for receiving attendance certificates for F.L., B.L., Diploma in Indian Music, Diploma in Librarianship and Diploma in Geography Examinations.
2	S	
3	Sun	
4	M	
5	Tu	Last day for receiving attendance Certificates for B.S.Sc. Part I Examination.
6	W	
7	Th	*Sri Rama Navami.*
8	F	Last day for receiving attendance certificates for the B.V.Sc. (O.R.) Final Examination. B.Sc. (Ag.) Final Examination.
9	S	
10	Sun	
11	M	Examinations for the Diploma in Indian Music and Diploma in Geography. Last day for receiving attendance certificates for the Examinations for the Certificates and Diplomas in French and German and for Certificate and Diploma in Anthropology.
12	Tu	
13	W	*Tamil New Year's Day* (Holiday).
14	Th	
15	F	*Good Friday* (Holiday).
16	S	F.L., B.L., and B.S.Sc. Part I Examinations. Last day for receiving attendance certificates for Diploma in Politics and Public Administration and Diploma in Statistics Examinations.
17	Sun	*Easter* (Holiday).
18	M	Publication of results of Pre-Registration Examn. B.V.Sc. (O.R.) Final Examination.
19	Tu	
20	W	Examination for the Diploma in Librarianship. Publication of results of First and Second M.B. & B.S. Examinations.
21	Th	
22	F	
23	S	*Penultimate Saturday* (Holiday).
24	Sun	
25	M	Certificate and Diploma in French and Certificate in Anthropology Examinations.
26	Tu	Certificate and Diploma Examinations in German. **Andhra University inaugurated, 1926.**
27	W	Diploma Examination in Anthropology.
28	Th	
29	F	
30	S	

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

MAY

1	**Sun**	**University of Delhi incorporated, 1922.** **The Madras University Act, 1923, came into force.**
2	M	Publication of results of B.Sc. (Pharmacy) Prely. and Final, Final M.B. & B.S., Intermediate (Nursing), B.Sc. (Nursing), M.D., M.S., and all the Diplomas in Medicine and Surgery Examinations (except Diploma in Tuberculosis.) Publication of results of B.S.Sc. Part I, F.E. & B.E. Examinations.
3	Tu	
4	W	
5	Th	
6	F	
7	S	
8	**Sun**	
9	M	Publication of results of B.A. (Hons.) Final and M.A., & B.V.Sc. (N.R.) and (O.R.) Prely. & Inter Examinations.
10	Tu	
11	W	
12	Th	
13	F	
14	S	Last day for submission of Dissertation for the Examination for the Diploma in Geography.
15	**Sun**	
16	M	Last day for receipt of applications with Treasury receipts in the Registrar's Office for the B.V.Sc. (N.R.) Final Examination. Publication of results of Matric., Intermediate, B.Sc. (Hons.) Part II (Main), B.Sc. (Tech.), B.Sc. (Ag.) Examinations.
17	Tu	
18	W	
19	Th	
20	F	
21	S	*Penultimate Saturday* (Holiday). **Madras University—Appointment of the First Vice-Chancellor under the Act of 1923.**
22	**Sun**	
23	M	Publication of results of B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I and Part II (Subsidiary), B.T., M.Ed., B.Com., B.V.Sc. (O.R.) Final, Entrance Test, O.T., B.O.L. (Pass and Honours), Diploma in Indian Music, Diploma in Librarianship and Sangita Siromani Examinations.
24	Tu	
25	W	
26	Th	*Ascension Day.*
27	F	
28	S	
29	**Sun**	
30	M	
31	Tu	

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

JUNE

1	W	Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. Part II and Diploma in Tuberculosis Examinations. Last day for receiving attendance certificates for the B.V.Sc. (N.R.) Final Examination.
2	Th	
3	F	
4	S	**University of Nagpur incorporated, 1923.**
5	**Sun**	
6	M	Publication of results of Certificate and Diploma Examinations in Anthropology.
7	Tu	
8	W	
9	Th	
10	F	
11	S	
12	**Sun**	
13	M	*Shab-e-Barath.* Publication of results of F.L., B.L. Examinations and for the Certificates and Diplomas in French and German.
14	Tu	
15	W	Last day for receipt of applications for admission to the Diploma Courses conducted by the University except Diploma Courses in Tuberculosis and Journalism. Publication of results of the Examination for the Diploma in Geography. B.V.Sc. (N.R.) Final Examination.
16	Th	
17	F	
18	S	*Penultimate Saturday* (Holiday).
19	**Sun**	
20	M	
21	Tu	
22	W	
23	Th	
24	F	
25	S	
26	**Sun**	
27	M	
28	Tu	
29	W	
30	Th	

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

JULY

1	F	*Half-yearly closing of Bank Accounts* (Holiday). Last day for submission of thesis for the Examination for the Diploma in Economics. **Agra University incorporated, 1927.**
2	S	
3	**Sun**	
4	M	
5	Tu	Last day for receiving attendance certificates for B.S.Sc. Part II and Diploma in Tuberculosis Examinations. Last day of receipt of applications with Treasury receipts in the Registrar's Office for Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I, B.Sc. (Hons.) Part II (Subsidiary), B.T., B.Com. and B.O.L. (Pass)and B.O.L. (Hons.) Part I Examinations.
6	W	
7	Th	
8	F	
9	S	
10	**Sun**	
11	M	Last day for receipt of applications for Research Studentships and Fellowships. Examinations for the Diploma in Economics, Politics and Public Administration and Statistics.
12	Tu	
13	W	
14	Th	
15	F	M.L., B.S.Sc. Part II and Diploma in Tuberculsis Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for F.L., B.L., Intermediate (Nursing), B.Sc. (Nursing) and for all the Diplomas in Medicine and Surgery Examinations (except Diploma in Tuberculosis); and for the **Convocation.** Last day for receiving attendance certificates for all the Diplomas in Medicine and Surgery Examinations (except Diploma in Tuberculosis).
16	S	
17	**Sun**	
18	M	**University of Bombay incorporated, 1857.**
19	Tu	
20	W	
21	Th	
22	F	**University of Mysore incorporated, 1916.**
23	S	*Penultimate Saturday* (Holiday).
24	**Sun**	
25	M	Publication of results of B.V.Sc. (N.R.) Final Examn.
26	Tu	
27	W	
28	Th	*Ramzan* (Holiday).
29	F	
30	S	
31	**Sun**	Last day for receipt of applications with Treasury receipts for exemption from the production of attendance certificates for Entrance Tests (for O.T. and Inter. Gr. D.) Examinations from private candidates and for O.T., Intermediate—Group D & B.O.L. (Pass & Honours) Examinations from *bona fide* teachers.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

AUGUST

1	M	Last day for receipt of reports from Colleges on the subjects and courses in which classes had not been opened for want of students.
2	Tu	**The Utkal University incorporated, 1943.**
3	W	
4	Th	
5	F	Last day for the submission of Return of Staff as on 1st August.
6	S	
7	**Sun**	
8	M	*Avani Avittam* (Holiday).
9	Tu	Publication of results of B.S.Sc. (Part II) and Diploma in Tuberculosis Examintions.
10	W	
11	Th	
12	F	
13	S	
14	**Sun**	
15	M	*Independence Day.* *Assumption Day.*
16	Tu	Last day for receiving attendance certificates for Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I and Part II Subsidiary, B.T., B.Com., B. O. L. (Pass) and B. O. L. (Honours) Part I Examinations. Publication of results of the Examinations for Diplomas in Economics, Politics and Public Administration and Statistics.
17	W	
18	Th	
19	F	
20	S	*Penultimate Saturday* (Holiday).
21	**Sun**	
22	M	
23	Tu	
24	W	
25	Th	
26	F	
27	S	*Vinayaka Chathurthi* (Holiday).
28	**Sun**	
29	M	
30	Tu	
31	W	Last day for receipt of applications for registration for M.Sc., M.Litt. and Ph.D. Degrees and for receipt of applications and theses for M.Sc., M.Litt., Ph.D., D.Litt., D.Sc., LL.D. and M.O.L. Degrees.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

SEPTEMBER

1	Th	Intermediate, B.A., B.A. (Hons.) Preliminary, B.Sc., B.Sc. (Hons.) Part I, B.O.L. (Pass) Part I B.O.L. (Hons.) Part I, B.Com. and B.T. Examinations. Last day for receipt of applications with Treasury receipts in the Registrar's Office for the B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations. Last day for receiving applications for pass certificates of Inter. Examination of March 1949.
2	F	
3	S	
4	**Sun**	*Onam* (Holiday).
5	M	**University of Madras incorporated, 1857.** Inter. Group D, Part III and B.O.L. Part II (Revised) Examinations. Publication of results of M.L. Examination.
6	Tu	
7	W	
8	Th	**The Indian Universities' Act of 1904 came into force in the University of Madras, 1904.**
9	F	
10	S	Last day for receiving attendance certificates for F.L. and B.L. Examinations.
11	**Sun**	
12	M	
13	Tu	
14	W	
15	Th	*Sri Jayanthi* (Holiday).
16	F	Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.V.Sc. (O.R.) Final Examination. Last day for receiving attendance certificates for the B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations.
17	S	*Penultimate Saturday* (Holiday).
18	**Sun**	
19	M	
20	Tu	
21	W	
22	Th	*Mahalaya Amavasai* (Holiday).
23	F	
24	S	
25	**Sun**	
26	M	F.L. and B.L. Examinations.
27	Tu	
28	W	
29	Th	
30	F	*Ayudha Pujah* (Holiday). Last day for receipt of applications with Treasury receipts for exemption from *bona fide* teachers to appear for Matric., Inter., B.A. and M.A. Degree Examinations and from other private candidates for Matric. Examination, March, 1950.

Note:—The date of commencement of all examinations and time-tables in detail as finally fixed will be published in the *Gazette* in the preceding August.

OCTOBER

1	S	*Ayudha Puja* (Holiday). Last day for receiving attendance certificates for B.V.Sc. (O.R.) Final, Intermediate (Nursing), and B.Sc. (Nursing) Examinations. **University of Patna incorporated, 1917.**
2	**Sun**	
3	M	*Bakrid* (Holiday).
4	Tu	B.V.Sc. (N.R.) & (O.R.) Prely. and Inter. Examinations. Last day for receipt of Hostel Returns and Reports of Medical inspections from Colleges.
5	W	Publication of results of Inter., B.A., B.A. (Hons.) Prely., B.Sc., B.Sc. (Hons.) Part I and Part II Subsidiary, B.O.L. (Pass) Part I, B.O.L. (Honours) Part I, B.Com. and B.T. Examinations.
6	Th	
7	F	**Osmania University incorporated, 1918.**
8	S	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Pre-Registration, First, Second and Final M.B. & B.S. and B.Sc. (Pharmacy) Prely. and Final Examinations.
9	**Sun**	
10	M	
11	Tu	
12	W	
13	Th	
14	F	**University of the Punjab incorporated, 1882.**
15	S	B.V.Sc. (O.R.) Final, Intermediate (Nursing), B.Sc. (Nursing) and all the Diplomas in Medicine & Surgery Examinations except Diploma in Tuberculosis. Last day for receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. Part II Examination.
16	**Sun**	
17	M	
18	Tu	
19	W	
20	Th	
21	F	*Deepavali* (Holiday).
22	S	*Penultimate Saturday* (Holiday).
23	**Sun**	
24	M	
25	Tu	
26	W	
27	Th	
28	F	
29	S	**The Madras University Amendment Act of 1929 came into force.**
30	**Sun**	
31	M	Last day for receipt of applications from institutions for recognition, affiliation or approval in any University course or courses from the following academic year.

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

NOVEMBER

1	Tu	**University of Travancore incorporated, 1937.** Last day for receipt of applications for scrutiny for purposes of appearing for the Matriculation Examination.
2	W	*Muharram* (Holiday)
3	Th	
4	F	
5	S	
6	**Sun**	
7	M	Publication of results of B.V.Sc. (N.R.) and (O.R.) Prely. and Inter. Examinations.
8	Tu	
9	W	
10	Th	Last day for receiving attendance certificates for B.S.Sc. Part II Examination.
11	F	
12	S	
13	**Sun**	
14	M	Publication of results of F.L., B.L. and B.V.Sc. (O.R.) Final Examinations.
15	Tu	Last day for receipt of applications with Treasury receipts in the Registrar's Office for Entrance Tests, O.T., B.O.L. (Pass and Honours), Sangita Siromani, B.V.Sc. (N.R.) Final, Diploma in Tuberculosis and Diploma in Journalism Examinations. Publication of results of Examinations for all the Diplomas in Medicine and Surgery (except Diploma in Tuberculosis), Intermediate (Nursing) and B.Sc. (Nursing).
16	W	**University of Allahabad incorporated, 1887.**
17	Th	
18	F	
19	S	*Penultimate Saturday* (Holiday).
20	**Sun**	
21	M	Last day for receiving attendance certificates for First, Second and Final M. B. & B. S. Examinations. B.S.Sc. Part II Examination.
22	Tu	
23	W	
24	Th	
25	F	
26	S	
27	**Sun**	
28	M	
29	Tu	
30	W	

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

DECEMBER

1	Th	**Publication in the Gazette of India in 1904, of the Chancellor's Declaration that the Body Corporate of the University of Madras had been constituted in accordance with the provisions of the Indian Universities' Act, 1904.** Last date for receipt of applications for the Diploma Courses in Tuberculosis and Journalism. **University of Rangoon and Muslim University, Aligarh incorporated, 1920.** Last day of receipt of applications with Treasury receipts in the Registrar's Office for B.S.Sc. (Part I) Examination. Last day for receiving attendance certificates for Pre-Registration, B.Sc. (Pharmacy) Prely. and Final and B.V.Sc. (N.R.) Final Examinations. First, Second and Final M.B. & B.S. Examinations.
2	F	
3	S	
4	Sun	
5	M	
6	Tu	
7	W	
8	Th	
9	F	
10	S	Pre-Registration and B.Sc. (Pharmacy) Prely. and Final Examinations.
11	Sun	**University of Lucknow incorporated, 1920.**
12	M	
13	Tu	
14	W	
15	Th	Last day of receipt of applications with Treasury receipts in the Registrar's Office for Matriculation, B.A. (Hons.) Final and B. Sc. (Hons.) Part II (Main subjects) and M.A. Examinations. B.V.Sc. (N.R.) Final Examination.
16	F	
17	S	
18	Sun	
19	M	
20	Tu	Publication of results of First, Second and Final M.B. & B.S. & B.S.Sc. Part II Examinations.
21	W	
22	Th	
23	F	
24	S	*Penultimate Saturday* (Holiday).
25	Sun	*Christmas Day* (Holiday.)
26	M	
27	Tu	
28	W	
29	Th	
30	F	
31	S	*Vaikunta Ekadesi* (Holiday).

Late applications for Examinations with an additional fee of Re. 1 will be accepted within five days after the prescribed date.

INSTITUTIONS RECOGNISED BY OR AFFILIATED TO THE UNIVERSITY.

CONSTITUENT COLLEGES

Faculties of Arts and Science

		Names of Colleges.	*Courses taught.*
1.	Madras,	Government Muslim College. 1	Intermediate, B. A., B. A. (Honours) & B.Sc.
2.	Do.	Loyola College. 2	Intermediate, B.A., B.Sc., B.Com., B.A. (Hons.), B.Sc. (Hons.) & B.Com. (Hons.).
3.	Do.	Pachaiyappa's College. 2	Intermediate, B.A., B.Sc., B. Com., B. A. (Hons.), B.Com. (Hons.) & B.O.L. (Hons.).
4.	Do.	Presidency College.* 1	B.A., B.Sc., B.A. (Honours) & B.Sc. (Honours.)
5.	Do.	Vivekananda College. 2	Intermediate, B.A., B.Sc., B.Com., B.A. (Hons.) & B.Sc. (Hons.).
6.	Do.	Queen Mary's College (Women). 1	Intermediate, B.A., B.Sc., B. Sc. (Hons.) & B. A. (Hons.).
7.	Do.	Women's Christian College (Women.) 2	Intermediate, B.A. & B.Sc.
8.	Do.	Ethiraj College for Women. 2	Intermediate & B.A.
9.	Do.	Stella Maris College. 2	Intermediate & B.A.

Faculty of Law

	Madras,	Law College. 1	B.L.

Faculty of Medicine

1.	Madras,	Medical College. 1	Pre-Registration, M.B.B.S., M.D., M.S., B.S.Sc., B.Sc. (Pharmacy) & Diploma Courses.
2.	Do.	Stanley Medical College. 1	Pre-Registration, M.B.B.S., M. D., M. S. & Diploma Course.

Faculty of Engineering

	Madras,	College of Engineering (Guindy). 1	B.E.

Note.—1. Institutions under Public Management.
2. Aided Institutions. 3. Other Institutions.

* Only Senior Intermediate classes conducted in 1948–49.

	Names of Colleges.	*Courses taught.*
	Faculty of Teaching	
1.	Madras, Lady Willingdon Training College (Women). 1	B.T. & M.Ed.*
2.	Do. Meston Training College. 2	Do.
3.	Do. St. Christopher's Training College. (Women). 2	Do.
4.	Do. Teachers' College, (Saidapet). 1	Do.
	Faculty of Veterinary Science	
	Madras, Madras Veterinary College. 1	B.V.Sc.
	Faculty of Commerce	
1.	Madras, Loyola College. 2	B.Com. (Pass & Hons.).
2.	Do. Pachaiyappa's College. 2	Do.
3	Do. Vivekananda College. 2	B.Com.
	Faculty of Oriental Learning	
1.	Madras, Loyola College. 2	(*a*) Intermediate—Group D. & B.O.L.
2.	Do. Pachaiyappa's College. 2	Intermediate & B. O. L. (Hons.).

(For Oriental Title Institutions *vide* p. 5)

AFFILIATED COLLEGES

Faculties of Arts and Science

1.	Bellary, Veerasaiva College. 2	Intermediate
2.	Calicut, Malabar Christian College. 2	Do.
3.	Do. Zamorin's College. 2	Do.
4.	Coimbatore, (Peelamedu) P.S.G. Arts College. 2	Do.
5.	Do. Nirmala College for Women. 2	Do.
6.	Cuddapah, Government College. 1	Do.
7.	Madura, Lady Doak College. 2	Do.
8.	Sivaganga, Rajah Doraisingam Memorial College. 2	Do.
9.	Tuticorin, St. Mary's College for Women. 2	Do.
10.	Vellore, Voorhees' College 2	Do.
11.	Anantapur, Government Arts College. 2	Intermediate, B.A. & B.Sc.
12.	Bangalore, St. Joseph's College. 2	Do.

* The course in M.Ed. is on a conjoint basis and with the assistance of the University Department of Psychology.

(*a*) Classes not conducted.

	Names of Colleges	*Courses taught.*
13.	Chittur (Cochin) Government Arts College. 3	Intermediate & B.A.
14.	Coimbatore, Government Arts College. 1	Intermediate, B.A., B.O.L. & B.Com.
15.	Ernakulam, Maharaja's College. 3	Intermediate, B.A., B.Sc. & B.Sc. (Hons.).
16.	Do. St. Alberts' College. 2	Intermediate & B.A
17.	Do. St. Teresa's College (Women). 3	Intermediate & B.A.
18.	Feroke, Farook College. 2	Intermediate & B.A.
19.	Karaikudi, Dr. Alagappa Chettiar College. 2	Intermediate, B.A., B.Sc. & B.Com.
20.	Kumbakonam, Government College. 1	Intermediate, B.A. & B.Sc.
21.	Kurnool, Osmania College. 2	Intermediate, B.A., B.Sc., B.Com. & B.O.L.
22.	Madanapalle, Besant Theosophical College. 2	Intermediate & B.A.
23.	Madura, American College. 2	Intermediate, B.A., B.Sc. & B.Com.
24.	Do. Madura College. 2	Do.
25.	Mangalore, Government College. 1	Intermediate, B.A. & B.Com.
26.	Do. St. Agnes College (Women). 2	Intermediate & B.A.
27.	Mangalore St. Aloysius' College. 2	Intermediate, B.A., B.Sc. & B.Com.
28.	Palamcottah, Sarah Tucker College (Women). 2	Intermediate & B.A.
29.	Palamcottah, St. John's College. 2	Intermediate and B.A.
30.	Do. St. Xavier's College. 2	Do.
31.	Palghat, Government Victoria College. 1	Intermediate, B.A. & B.Sc.
32.	Pudukottai, H. H. The Raja's College. 1	Intermediate and B.A.
33.	Salem, Salem College. 2	Intermediate & B.A.
34.	Tambaram, Madras Christian College. 2	Intermediate, B.A., B.Sc., B.A. (Hons.) & B.Sc. (Hons.)
35.	Tellicherry, Goverment Brennen College. 1	Intermediate and B.A.
36.	Thevara (Ernakulam), Sacred Heart College. 3	Intermediate, B.A., B.Sc. & B.Com.
37.	Tinnevelly, Madura Diraviyam Thayumanavar Hindu College. 2	Intermediate & B.A.
38.	Tirupati, Sree Venkateswara College. 2	Do.

	Names of Colleges.	*Courses taught.*
39.	Trichinopoly, Holy Cross College (Women). 2	Intermediate & B.A.
40.	Trichinopoly, National College. 2	Do.
41.	Do. St. Joseph's College. 2	Intermediate, B.A., B.Sc., B.Com. B. A. (Hons.) & B. Sc. (Hons.)
42.	Trichur, Sree Kerala Varma College. 3	Intermediate, B.A., B.O.L. & B.Com.
43.	Trichur, St. Mary's College (Women). 3	Intermediate & B.A.
44.	Trichur, St. Thomas' College. 3	Do.
45.	Vaniyambadi, Islamiah College. 2	Intermediate, B.A. & B.Com.
46.	Virudhunagar, Senthikumara Nadar College. 2	Intermediate & B.A.

Faculty of Agriculture.

Coimbatore, Agricultural College. 1 B.Sc. (Ag.)

Faculty of Medicine.

Vellore, Christian Medical College. 2 Pre-Registration & M.B.B.S. Course.

Faculty of Engineering.

Anantapur, College of Engineering. 1	B.E.
Coimbatore, (Peelamedu) Arthur Hope College of Technology.	B.E.

Faculty of Teaching

Mangalore, St. Ann's Training College (Women). 2	B.T.
Trichur, Government Training College. 3	Do.

Faculty of Commerce.

1.	Coimbatore, Government Arts College. 1	B.Com.
2.	Karaikudi, Dr. Alagappa Chettiar College. 2	Do.
3.	Kurnool, Osmania College. 2	Do.
4.	Madura, American College. 2	Do.
5.	Do. Madura College. 2	Do.
6.	Mangalore, Government College. 1	Do.
7.	Do. St. Aloysius' College. 2	Do.
8.	Thevara (Ernakulam), Sacred Heart College. 3	Do.
9.	Trichinopoly, St. Joseph's College. 2	Do.
10.	Trichur, Sree Kerala Varma College. 3	Do.
11.	Vaniyambadi, Islamiah College. 2	Do.

ORIENTAL TITLE EXAMINATIONS.

FACULTY OF ORIENTAL LEARNING

1. Dharmapuram, Oriental College.
2. Feroke (S. Malabar), Rawzathul Ulloom Arabic College.
3. Karkala (South Kanara), S. B. S. Sanskrit College.
4. Kurnool, Madrasa Islamiah Arabic College.
5. Madras, Sanskrit College and Swaminatha Sastri Vedanta Patasala, Mylapore.
6. Madras, Sri Venkataramana Dispensary and Ayurvedic College, Mylapore.
7. Madura, Rameswaram Devastanam Patasala.
8. Madurantakam (Chingleput), Sri Ahobila Mutt Free Sanskrit College.
9. Mailam (South Arcot), Sri Sivagnana Balaya Swamigal Tamil College.
10. Melasivapuri (Pudukottai), Ganesar Sentamil Kalloori.
11. Omerabad (North Arcot), Jamalia-i-Darus-Salam.
12. Pattambi (South Malabar), Sri Nilakanta Central Sanskrit College.
13. Pavaratti (South Malabar), Sahitya Dipika Sanskrit College.
14. Perdala (South Kanara), Mahajana Sanskrit College.
15. Pulikkal (S. Malabar), Madeenathul Uloom Arabic College.
16. Puthucode (South Malabar), Harihara Sanskrit College.
17. Rayadrug (Bellary), Madrasai-Muhammadiya Arabic College.
18. Sholinghur (North Arcot), Veda Vedanta Bodhini Sanskrit College.
19. Sriperumbudur (Chingleput Dt.), Sanskrit College.
20. Tanjore, Karanthai Pulavar Kalloori.
21. Tiruppanandal (Tanjore Dt.), Sri Kasivasi Swaminatha Swamigal Tamil Kalloori.
22. Tirupati (Chittoor Dt.), Sri Venkateswara College for Oriental Learning.
23. Tiruvadi (Tanjore Dt.), Raja's College of Sanskrit and Tamil Studies.
24. Udipi (South Kanara), Dwaita Vedanta Sanskrit College.
25. Vellore (North Arcot Dt.), Bakiyatussalahat Arabic College.

FACULTY OF FINE ARTS

Institution approved for the Sangita Siromani Course.

Madras (Adyar), Kalakshetra.

*CHAPTER XXXIII.

Register of Matriculates.

Ordinances under Sections 19 *(p), and* 31 *(a) of the Act.*

Maintenance of Register of Matriculates---Enrolment.

1. The Syndicate shall maintain a Register of Matriculates in which the names of the following classes of persons shall be registered :—

(*a*) Candidates who pass the Matriculation Examination of the University.

(*b*) Holders of completed Secondary School Leaving or European School Leaving Certificates declared eligible, and holders of other Certificates accepted by the Syndicate as qualifying for admission to this University and candidates who have passed an examination accepted by the Syndicate as equivalent to the Matriculation Examination of this University, when admitted to a University course of study.

(*c*) Holders of any degree, title, diploma or certificate, other than those specified in (*a*) or (*b*), on first admission to a University course of study.

(*d*) Persons, other than those specified in (*a*), (*b*) or (*c*), who with or without exemption from attendance certificates are permitted to appear for the first time for any examination of this University other than the Matriculation Examination.

(*e*) Persons other than those specified in (*a*), (*b*), (*c*) or (*d*), who are candidates for admission to a Research Degree of this University.

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*For Chapters I to XXXII *vide* Volume I, University Calendar, 1948--49.

2. The Register of Matriculates maintained under the preceding Ordinance shall set forth, in respect of each Matriculate, the name in full, the name of father or guardian, age, religion, language, school where educated, number and date of School-Leaving Certificate or European School-Leaving Certificate, Government issuing certificate, accepted examination, date of passing and number of certificate, authority issuing certificate, institution entered, date of admission, and University examination for which he has been permitted to appear, or Research Degree for which he is a candidate.

CHAPTER XXXIV.

Admission of Holders of S. S. L. C. and E. S. L. C. to University Courses of Study.

Ordinances framed under Section 19 (p) of the Act.

Secondary School-Leaving Certificates.

1. (a) Holders of completed Secondary School-Leaving Certificates may be admitted to University Courses of Study if they (a) shall have completed fourteen years and six months on the fifteenth day of July of the year in which they seek admission to Courses of Study, and (b) shall have secured at the Public Examination the marks prescribed below, and been declared eligible for admission by the Syndicate :—

(i) In the case of Certificates issued under the authority of the Government of Madras :

In Group A not less than 40 marks in English and not less than 35 marks in the selected Second Language (except in the case of pupils who are exempted by the Director of Public Instruction from the study of the Second Language), and 130 marks in the following four subjects taken together : (1) Elementary Mathematics, (2) Elementary Science, (3) Outlines of Modern History and History of India and Geography, and (4) one of the following subjects of Group C, *viz.*, Algebra and Geometry, Physics, Chemistry, Botany, Physiology, Geography, History of India and Movements in History, a Third Language, Indian Music, Book-keeping, Commercial Practice, Shorthand, Typewriting, Domestic Science, Agriculture, House-keeping and Nursing, Needle-work, Dress-making and Embroidery, Lace-work and Crochet, Precis-writing and Indexing, and Fisheries Technology ; the marks being not less than 35 per cent in each of any two of these four subjects and not less than 25 per cent in each of the other two :

Provided that a certificate holder who secures in the aggregate not less than 210 marks in the six subjects, or not less than 175 marks if he has been exempted from the study of the Second Language under Group A, but fails in not more than two subjects by a deficiency of not more than one mark in each subject, shall be declared eligible for admission to University Courses of Study.

There shall be a Moderation Board appointed by the Syndicate to consider hard cases.

(ii) In the case of certificates issued under the authority of the Government of Cochin :—

In Group A not less than 40 marks in English and not less than 35 marks in the selected Second Language (except in the case of pupils who are exempted by the Director of Public Instruction from the study of the Second Language), and 130 marks in the following four subjects taken together: (1) Elementary Mathematics, (2) Elementary Science, (3) Outlines of Modern History and History of India and Geography, and (4) one of the following subjects of Group C, *viz.*, Mathematics, Physics, Chemistry, Botany, Physiology, Geography, History of England, History of India, A Third Language, Deductive Logic, Indian Music, European Music, Shorthand, Typewriting, Agriculture, Elements of Mechanical Engineering, Domestic Science, Book-keeping, Needlework, and Commercial Practice; the marks being not less than 35 per cent in each of any two of these four subjects and not less than 25 per cent in each of the other two:

Provided that a certificate holder who secures in the aggregate not less than 210 marks in the six subjects, or not less than 175 marks, if he has been exempted from the study of the Second Language under Group A, but fails in not more than two subjects by a deficiency of not more than one mark in each

subject, shall be declared eligible for admission to University Courses of Study.

There shall be a Moderation Board appointed by the Syndicate to consider hard cases.

(*b*) A candidate for admission to University Courses of Study who in any year fails to qualify by reason of deficiency in any subject or subjects in which he has undergone examination shall be required to appear again at the Public Examination in all the six (or five) subjects, and his eligibility shall be determined by the marks obtained by him at his last appearance.

(*c*) No holder of a certificate declared ineligible on a scrutiny shall be declared eligible on a rescrutiny according to Ordinances prescribed after the first scrutiny; provided, however, it shall be competent for the Syndicate to re-scrutinize the Certificates of candidates who appeared for the S.S.L.C. Examination of 1925 or earlier, in accordance with the Rules in force at the time (1926), and the certificates of candidates who would have been eligible had the subjects of Shorthand and Typewriting been included in the list of subjects in the year in which they appeared for the examination under the S.S.L.C. Scheme of 1929 (*i.e.* from the S.S.L.C. Examination of 1932), on payment of the prescribed fee.

(*d*) A complete list of certificate holders declared eligible for admission to University Courses of Study shall be published in the *Fort St. George Gazette*, and a copy of the list shall be furnished to each Principal of a Constituent or an Affiliated College.

European School-Leaving Certificates.

2. (*a*) Candidates who have appeared for the Madras European High School Examination or the Bangalore European High School Examination shall be declared eligible for admission to University Courses of Study if they have secured a "pass" at the European High School Examination, Madras, *or* Bangalore, respectively.

Such persons shall have completed the age of fourteen years and six months on the fifteenth day of July of the

year in which they seek admission to University Courses of Study.

(*b*) A candidate for admission to University Courses of Study, who in any year fails to qualify for admission by reason of deficiency in any subject or subjects in which he has undergone examination, shall be required to appear again at the Public Examination in all subjects and secure a pass.

(*c*) A complete list of certificate holders declared eligible for admission to University Courses of Study shall be published in the *Fort St. George Gazette* and a copy of the list shall be furnished to each Principal of a Constituent or an Affiliated College.

CHAPTER XXXV.

Admission to Courses of Study.

Ordinances under Sections 19 *(p) and* 31 *(a) of the Act.*

Registration as Matriculates.

1. No person shall be permitted to enter upon a University Course of Study for the first time unless he gets his name registered in the Register of Matriculates maintained by the Syndicate. Every applicant for registration shall pay to the University such registration fee as may be prescribed.

Such persons shall have completed the age of fourteen years and six months on the fifteenth day of July of the year in which they seek admission to University Courses of Study :

* Provided that it shall be competent for the Syndicate to waive a strict compliance with the above age limit in the case of a student who has been declared eligible in a year prior to the date of admission.

Conditions of admission to the Intermediate course.

2. Admission to the course of study for the Intermediate Examination shall be granted only to the following classes of students :—

(*i*) Persons who have passed the Matriculation Examination of this University.

(*ii*) Holders of completed Secondary School-Leaving Certificates and of completed European School-Leaving Certificates issued under the authority of the Government of Madras or Cochin, declared eligible for admission to a University Course of Study according to the rules and directions which the Syndicate may prescribe from time to time.

(*iii*) (*a*) Persons who have passed the Matriculation Examination or Entrance Examination of other Indian Universities and holders

* On payment of Rs. 10.

of completed Secondary School-Leaving Certificates issued under the authority of Indian States other than Cochin who have been declared eligible for admission to a University course of study by the University in the State concerned, provided that recognition shall be granted in such cases on a reciprocal basis :

provided, however, that a pass in the First or Second Division only of the Higher Secondary Certificate Examination of Hyderabad shall be accepted.

(*b*) Persons who have passed Secondary School-Leaving Certificate Examinations and European School-Leaving Certificate Examinations, in respect of which no Eligible List is issued by a University, and persons who have passed other Public Examinations, subject to such conditions as may be prescribed by the Syndicate from time to time.

(*iv*) Holders of Oxford and Cambridge School Certificates, whose certificates satisfy the conditions laid down by the Syndicate.

(*v*) Persons who have passed the *Entrance Test for Intermediate—Group D (i.e.* Oriental Title Entrance Test and Matriculation English at one and the same appearance) of the University of Madras; provided, however, that such candidates shall be eligible to take only Group D under Part III of the Intermediate Course.

Note :—Candidates who desire to be admitted to Intermediate—Group D should again sit for the whole examination (*viz.*, Oriental Title Entrance Test and Matriculation English) even though they might have passed the Oriental Title Entrance Test previously. Candidates taking the Entrance Test (Sanskrit) conducted by the Educational Department of the Government of Madras should pass that examination as well as Matriculation English in one and the same year.

3. The conditions under which students may be admitted to the courses of study for Oriental Titles shall be as follows:—

No candidate shall be admitted to the courses of study for any of the Oriental Titles unless he has passed :

A

The Matriculation Examination of this University or an examination accepted by the Syndicate as equivalent thereto, *or*

B

the Entrance Test prescribed below :—

(i) SIROMANI AND VIDVAN (*a*).

No person shall be admitted to the courses of study for the Siromani and Vidvan (*a*) Examinations unless he has passed the Entrance Test conducted by the Educational Department of the Government of Madras.

(ii) VIDVAN (*b*) AND (*d*), ADIB-I-FAZIL, MALPAN AND SOPPAR.

In the case of candidates for the Vidvan (*b*) and (*d*), Adib-i-Fazil, Malpan and Soppar Titles, the Entrance Test shall be in the selected language or main language (if there are two languages) and shall consist of the two papers set for the Intermediate Examination in Arts and Science in the corresponding language under Part II with the following modifications :—

(*a*) A few questions on Grammar shall be added in that part of the Intermediate (Part II) first paper intended for the candidates for the above Titles, and

(*b*) the question on Translation in the second paper for the Intermediate Examination shall be replaced by questions on Paraphrase or Composition.

Candidates obtaining not less than 40 per cent of the total marks in the two papers taken together shall be certified to be eligible for admission to the respective courses.

A candidate who has passed in Part II of the Intermediate Examination in Arts and Science of this University shall, without any further Entrance Test, be admitted to the course, provided that the language selected as the main or the only language for the course is identical with the language in which he has passed Part II of the Intermediate Examination.

(iii) AFZAL-UL-ULAMA, MUNSHI-I-FAZIL, TABIB-I-KAMIL AND AFZAL-UL-ATIBBA.

There shall be two written papers of 3 hours' duration each. Each paper shall carry 100 marks.

(1) Prose and Poetry Text-books.

(2) Diniyyat.

Candidates for Afzal-ul-Ulama and Afzal-ul-Atibba shall pass the Test in Arabic and candidates for Munshi-i-Fazil and Tabib-i-Kamil shall pass the Test in Persian.

In regard to the test in Arabic, the papers shall be set in the Arabic Language, and the candidates shall have the option to write their answers either in Arabic or in their own mother-tongue, *viz*., Urdu, Tamil, Malayalam.

In regard to the test in Persian, the paper shall be set in Urdu, and the candidates are required to answer in Urdu only.

Candidates obtaining not less than 40 per cent of the total marks in the two papers taken together shall be certified to be eligible for admission to the respective courses:

Provided, however, that in the case of candidates for the Oriental Titles in Arabic, Persian and Urdu, the above Ordinance shall have effect only from the beginning of the academic year 1945-46.

It shall be competent for the Syndicate to recognize the Admission Tests of other Universities or examinations conducted by Indian States as qualifying for admission to the Vidvan and Siromani Courses of this University.

Conditions of admission to Sangita Siromani Course.

4. Admission to the Sangita Siromani Course shall be open to:—

(1) Holders of completed Secondary School-Leaving Certificates with Indian Music as an optional subject, issued under the authority of the Government of Madras or Cochin, declared eligible for admission to a course of study in this University.

(2) Holders of completed Secondary School-Leaving Certificates without Indian Music as an optional subject,

issued under the authority of the Government of Madras or Cochin, declared eligible for admission to a course of study in this University or an examination of some other University or Body recognized by the Syndicate as equivalent thereto, and who have also passed the Technical Examination in Indian Music (Higher Grade) of the Government of Madras, or the Teachers' Certificate Examination in Indian Music of the Government of Madras.

(3) Candidates who have passed the Technical Examination in Indian Music (Higher Grade) of the Government of Madras or the Teachers' Certificate Examination in Indian Music of the Government of Madras and in English of the Matriculation Examination of the University of Madras:

Provided, however, it shall be competent for the Syndicate to permit a candidate who has passed the Matriculation Examination of this University or has been declared eligible for admission to a course of study in this University, but has not passed the Technical Examination in Indian Music (Higher Grade) of the Government of Madras to join the Sangita Siromani Course on the recommendation of the head of the institution, provided that the candidate qualifies in the Technical Examination in Indian Music (Higher Grade) of the Government of Madras before the end of the first academic year.

Recognition of Examinations of other Universities and Bodies

5. For the purpose of admission to courses of study in this University, the Syndicate shall have the power to recognize Intermediate Examinations of other Indian Universities and of duly constituted Boards of Secondary and Intermediate Education, and Degree Examinations of other Indian Universities, as equivalent to the corresponding examinations of this University, subject to the following conditions:—

(1) That the normal length of the course prescribed leading to the examination sought to be recognized shall not be less than that for the corresponding examination of this University;

(2) that, in cases of applications other than those specified in the Regulations governing admission of candidates holding the Diploma of L.M.P. to the M.B. & B.S. Course, the course

of study for the examination sought to be recognized shall have been pursued in a University or in a college recognized by a University, provided that it shall be competent for the Syndicate in special cases to waive the above condition; and

(3) that, in the case of admission to a professional course, the restriction of subjects, if any, imposed on candidates of this University shall be applicable to candidates who have passed examinations of other Universities or Bodies.

6. For the purpose of admission to courses of study in this University, examinations conducted by Bodies other than those mentioned in the above Ordinance may, in individual cases and on their merits, be recognized by the Syndicate as equivalent to the corresponding examinations of the University.

War Emergency Law.

7. Notwithstanding anything that may be contained to the contrary in the Laws of the University, it shall be competent for the Syndicate—

(1) with regard to students whose courses of studies, in countries involved in or affected by the War (in September 1939), have been interrupted, to dispense with a strict compliance with the Laws, as may be decided in each and every case in regard to admission to courses of studies or attendance on courses of this University or such other conditions as may be laid down in the Laws, and

Ordinance. **Concessions to students who have rendered service in His Majesty's Forces.**

(2) in pursuance of the powers conferred upon it by Statute 2 (*z-1*) of Chapter XII—The Syndicate—Vol. I, Part I, Calendar, 1945-46, and Regulation 13 (2) of Chapter XL—Admission to Examinations, etc.,—Vol. I. Part II, Calendar, 1945-46, and with reference to members of His Majesty's Forces who come within the jurisdiction of this University in the sense of having been candidates declared eligible for admission to courses of study in this University or Matriculates or Intermediates or students for a Degree of this University,

to award the concessions as noted hereunder to students who have rendered approved service in His Majesty's Forces.

Provided, however, that it shall be competent for the Syndicate in determining 'approved service' to determine this service with regard to such applicants as have been prisoners of war in so far as the service was approved service prior to the date on which the candidate had been taken prisoner of war.

I. De facto students.

Concessions may be given to the following cases of students whose studies were interrupted due to joining His Majesty's Forces, provided the applications are submitted through the Principal of the College or the Head of Research Institute or Department in which the applicant was a student immediately prior to joining His Majesty's Forces.

Professional Degrees and B. Com. Degree.

(a) Medical Degrees (M.B. & B.S., B.S.Sc., B.Sc. (Pharm.), B.E., B.V. Sc. and, B.Sc. Ag.)

Condonation in part of a course or courses of study in any particular subject may be given, each case being considered on its merits.

Note :—Owing to the fact that practical work involves a very important part of these courses, it is not possible to give any substantial reduction in the course as a whole.

(b) B.T.—Condonation of a portion of the period required for the course may be given. Each case shall be considered on its merits.

(c) Law.—Condonation of shortage of attendance for the course may be given for an examination or examinations, provided no student shall be permitted to appear for the B.L. Degree Examination prior to his passing the F.L. Examination. Each case shall be considered on its merits.

(d) B. Com.—Condonation of attendance from the course of study in whole or in part may be given. Each case shall be considered on its merits.

Professional Degrees—General.

Individual cases may be considered, each on its merits, where prior to joining His Majesty's Service or while in His Majesty's Service a candidate has appeared for a Professional Examination (other than Medical Examination) or the B. Com. Degree Examination and has failed to gain a pass due to failure in gaining the minimum prescribed or where the minimum prescribed has been obtained by failing to secure the minimum required in any particular subject, with a view to awarding the degree without further examination.

Non-Professional Degrees.

(e) *M. Litt.*—Research work under supervision for the remaining period shall be waived and permission may be given to submit the thesis, provided the provisions of the Regulations regarding eligibility in other directions are complied with.

(f) *M. Sc.* —Ordinarily the period of training required under the Regulations shall be expected to be complied with, but condonation of short periods may be given.

(g) *Honours and Post-graduate Degrees in Arts.*— Condonation of shortage of periods of attendance may be given and permission granted to appear for the respective examinations, provided such applications are submitted through the Principal of the College in which the student formerly studied. Both the Preliminary and Final Examinations will require to be passed unless the candidate has already passed the Preliminary Examination. The condition in the Regulations for Honours Degree specifying a maximum period of four years within which the candidate must have qualified for the Degree shall not be insisted upon.

(h) *Honours and Post-graduate Degrees in Science.*— Condonation of shortage of periods of attendance may be given and students permitted to appear for the respective examinations provided that the application is submitted in each case with a statement from the Principal of the College that the applicant is fit to appear for the examination in the subject or subjects in which he was formerly a student. Both the Preliminary (or Part I) and Final Examinations will require to be passed unless the candidate has already passed the Preliminary (or Part I) Examination. The condition in the Regulations for Honours Degree specifying

a maximum period of four years within which the candidate must have qualified for the Degree shall not be insisted upon.

(i) B.A.—Arts or Science.—It shall be open to any candidate who has pursued a course of study for the B.A. or any other Degree in a constituent or affiliated college of this University to appear for a Special Examination for the purpose of qualifying for a "War Degree" without further attendance in the course of study in a college.

Candidates who have been preparing for the B.A. or B.Sc. Degree Examination shall have the option of appearing for the usual Degree Examination without further attendance at a college, provided that in the case of those who took science subjects the Principal of the College certifies that the candidate is fit to appear.

(j) B. Sc.—It shall be open to any canditate who was formerly a student preparing for this Degree to appear without further attendance in the course of study in a college, provided that the Principal of the College certifies that the candidate is fit to appear for the examination. Exemption will be given from Part I of the Degree Examination. All such candidates shall, however, have the option of appearing for the B.A. Special Examination in Science without further attendance in a college.

B.A. and B. Sc.—Military Service shall be considered as equivalent to a pass in Military Science—Certificate 'B'—and exemption given in respect of the papers in "(1) Shakespeare" and "(2) Modern Poetry" for B.A., and in respect of one subsidiary subject for B.Sc. in accordance with the Regulations.

Further, exemption may be given from Part I or Part II of the B.A. Degree Examination provided the candidate has already passed in one of these Parts.

A candidate who has passed in any two Parts of the B.A. Degree Examination may be given, should he so desire, a B.A. War. Degree.

A candidate who was studying for the B.Sc. Degree may be given the B.A. War Degree provided he has passed the Main and one Subsidiary subject or the Main subject and Part I. He may, however, be given the B.Sc. Degree if he has passed the Main and one Subsidiary subject.

It shall, however, be open to the candidate, if he so desires, to proceed to the ordinary Degree Examination.

(*k*) *Intermediate.*—Condonation of attendance from the course of study in whole or in part may be given. Each case shall be considered on its merits.

Military Service may be considered as equivalent to a pass in Military Science—Certificate 'A'—and exemption given in respect of one optional subject under Part III of the Intermediate Examination.

Further, exemption shall be given from Part II or Part III of the examination provided the candidate has already passed in one of these Parts.

(*l*) *B.O.L.*—Condonation of attendance from the course of study in whole or in part may be given. Each case shall be considered on its merits.

Each application for award of the Degree without being required to comply with the Regulations fully shall be considered on its merits.

Note:—In the cases enumerated above [(*a*) to (*l*)] all examinations will be the usual examinations held by the University in the respective Faculties and Degrees except with reference to the Special Examination for B. A. which will be defined separately.

II. Candidates who were not de facto students.

It shall be open to Secondary School-Leaving Certificate holders declared eligible for admission to a course of study in this University, Matriculates and Intermediates of this University who were not students immediately prior to joining His Majesty's Forces to appear for (1) the next higher examination in the Humanities without further study in a college, and (2) for the next higher examination involving science subjects provided the Principal of the College certifies that the applicant is fit to appear for the examination in the case of the Intermediate or on the production of certificate of attendance for one year in a constituent or affiliated college of this University in the case of a Degree Examination. Intermediates of this University shall, however, have the option of appearing for the Special War Degree.

III. Bachelor of Arts War Degree.

It shall be competent for the Syndicate to award the B. A. War Degree to—

(*a*) candidates who have passed the Intermediate Examination in Arts and Science and have subsequently passed any two parts of the B. A. Degree Examination of this University or Part I and the Main Subject of the B. Sc. Degree Examination of this University ; and

(*b*) candidates who pass the B. A. War Degree Examination in accordance with the following conditions :—

Candidates for the B.A. War Degree Examination shall be required to have passed the Intermediate Examination in Arts and Science of this University at least two years prior to their appearance at the B.A. War Degree Examination and to have had not less than one year of approved War Service which period may, however, include any period spent on training.

The subjects for the examination shall comprise the following :—

(1) A general paper in English of two hours' duration comprising an essay and paraphrasing or precis.

(2) A paper of one-and-a-half hours' duration on Translation from English into a selected language which shall be from the list given below :—

(*a*) *Classical* :

Sanskrit.
Greek.
Latin.
Arabic.
Persian.
Hebrew.
Syriac.

(*b*) *Modern* :

(1) Foreign :
French.
German.

(2) Indian :
Tamil.
Telugu.
Kannada.

Malayalam.
Urdu.
Marathi.
Oriya.
Hindi.
Bengali.
Burmese.
Sinhalese.

(3) A paper of three hours' duration divided into two sections, *viz.*, (*a*) dealing with selected topics connected with the recent War, and (*b*) questions on current problems, and

(4) A *viva voce* examination.

The three written papers and *viva voce* shall carry one hundred marks each.

A candidate shall be declared to have qualified for the Degree if he secures at one and the same sitting not less than 35 per cent in each of any two of the subjects, not less than 30 per cent in each of the other two subjects and not less than 35 per cent of the aggregate number of marks.

Successful candidates will not be classified.

The last date for the receipt of applications for the examination and the dates for holding the examination and publication of the results shall be the same as for the ordinary B.A. Degree Examination, provided that the first examination under the Ordinance shall be held in April 1946 and the dates for the receipt of applications for the examination, for holding the examination and for publication of the results shall be—

1. Date of receipt of applications—1st March 1946.
2. Date of commencement of Examination—
   First Paper—15th April 1946.
   Second Paper—16th April 1946.
   Third Paper—17th April 1946.
   Viva voce—24th April 1946.
3. Date of publication of results—6th May 1946.

The fee for the examination shall be Rs. 30.

NOTE-The Ordinance will be in force till the end of December 1948.

8. Notwithstanding anything that may be contained to the contrary in the Laws of the University, it shall be

competent for the Syndicate, with regard to students whose courses of studies are shown to the satisfaction of the Syndicate to have been interrupted owing to disturbed conditions in certain Provinces in the year 1947, to dispense with a strict compliance with the Laws, as may be decided in each and every case, in regard to admission to courses of studies or attendance at courses of this University or such other conditions as may be laid down in the Laws.

Concessions re-Refugees from other Provinces.

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CHAPTER XXXVI.

Conduct of Examinations.

Ordinances under Section 31 (*h*) *of the Act.*

Place of Examinations.

1. (*a*) All examinations shall be held in Madras and in such other places as may be fixed by the Syndicate. A list of the centres at which examinations will be held shall ordinarily be published annually in the *Gazette* in the preceding April.

(*b*) When there are more centres than one for a written examination question papers shall be given out to candidates on the same day and at the same hour in every centre.

Gazetted holidays *dies non.*

2. Gazetted holidays shall be considered *dies non* for purposes of the University Examinations, but the Syndicate may, for special reasons, decide to hold examinations on such holidays.

Examinations held twice in a year.

3. The following examinations shall be held twice in the academic year :—

1. Intermediate.
2. B. A. Degree.
3. B. A. (Honours) Preliminary.
4. B.Sc. Degree.
5. B.Sc. (Honours)—Part I and Part II —Subsidiary Subjects only.
6. B. T.
7. Law—F. L. and B.L.
8. Pre-Registration Examination (Medical).
9. M.B. & B.S. Examinations.
10. B.S.Sc.—Parts I and II.
11. Diploma in Gynaecology and Obstetrics.
12. Diploma in Venereology.
13. Diploma in Dermatology.
14. Diploma in Ophthalmology.
15. Diploma in Oto-Rhino-Laryngology.
16. Diploma in Radiology.
17. Diploma in Orthopaedics.
18. Diploma in Tuberculosis.

19. B.Sc. (Pharmacy).
20. B.Sc. (Nursing).
21. B. V. Sc. Degree.
22. B. Com. Degree.
23. †Oriental Titles.
24. †B.O.L. (Pass).
25. B.O.L. (Honours) Part I only.
26. B.Mus.—Part I only.

The other examinations shall be held once a year.

Standard of Question Papers.

4. The papers set in any subject shall be such as a candidate of decided ability well prepared in the subject can reasonably be expected to answer within the time allotted.

Nature of Questions.

5. No question shall be put at any University examination calling for a declaration of religious belief, or profession or political views on the part of the candidate, and no answer given by any candidate shall be objected to on the ground of its giving expression to any particular form of religious belief, profession or political views.

Conduct of Examinations.

6. All examinations, except practical and *viva voce* examinations, shall be conducted by means of printed, typed or written papers to be set and answered, except in the case of Indian languages, and languages for the Oriental Titles Examinations, in English unless otherwise stated therein.

It shall be competent for the Syndicate to permit candidates to appear for and answer the paper or papers in a Group or a subject or subjects in a Group under Part III of the Intermediate Examination in an Indian Language, provided one year's notice had been given by the college concerned.

It shall also be competent for the Syndicate to permit candidates to appear for and answer the papers in a Group under Part III of the B. A. Degree Examination in an Indian Language, provided one year's notice is given by the college concerned.

† Examinations in Oriental Titles (Intermediate—Group D) and B. O. L. (Pass) Part II will be held in September only in such languages in which colleges are affiliated and candidates are appearing therefrom.

Examination Boards.

7. Examination Boards shall, whenever there are candidates, be appointed annually by the Syndicate for the following subjects or groups of subjects—

i.	English.	xxiv.	Geology.
ii.	Greek and Latin.	xxv.	Home Science.
iii.	French.	xxvi.	Anthropology.
iv.	German.	xxvii.	Philosophy.
v.	Sanskrit.	xxviii.	History and Politics.
vi.	Marathi.	xxix.	Economics.
vii.	Hindi.	xxx.	Geography.
viii.	Oriya.	xxxi.	Teaching.
ix.	Bengali.	xxxii.	Law.
x.	Burmese.	xxxiii.	Medicine.
xi.	Sinhalese.	xxxiv.	Sanitary Science.
xii.	Hebrew and Syriac.	xxxv.	Pharmacy.
xiii.	Arabic, Persian and Urdu.	xxxvi.	Nursing.
xiv.	Tamil.	xxxvii.	Engineering.
xv.	Telugu.	xxxviii.	Agriculture.
xvi.	Kannada.	xxxix.	Veterinary Science.
xvii.	Malayalam.	xl.	Technology.
xviii.	Mathematics.	xli.	Commerce.
xix.	Statistics.	xlii.	Indian Music.
xx.	Physics.	xliii.	Western Music.
xxi.	Chemistry.	xliv.	Drawing and Architecture.
xxii.	Botany.	xlv.	Journalism.
xxiii.	Zoology including Physiology.		

The Syndicate may appoint separate Boards of Question Paper-Setters and Boards to conduct examinations, as it deems fit. Joint or separate Boards may be appointed to conduct different examinations.

Chairmen of Boards and their duties.

8. The Syndicate shall appoint a Chairman for each Board, who shall at the conclusion of every examination forward to the Syndicate a report on the manner in which the examination has been conducted.

Special Boards.

9. The Syndicate may appoint Special Boards of Examiners to supervise the Matriculation Examination and the Intermediate Examination in Arts and Science.

Boards' report to the Syndicate.

10. The Examination Boards shall report to the Syndicate the results of all examinations conducted or supervised by them.

Approval and publication of results.

11. The Syndicate shall have power to approve and publish the results.

Manner of publication of results of successful candidates.

12. In the examinations for Degrees in Law, Medicine, Engineering, Agriculture and Commerce and for the final part of the Degrees of the B. A. (Honours), and B. Sc. (Honours), the names of all successful candidates shall be published in the order of proficiency. In the case of the other examinations, the names of candidates who are placed in the First Class shall be published in the order of proficiency; in the case of the B. A. and B. Sc. Degree Examinations, the names of candidates who are placed in the Second Class shall also be published in the order of proficiency. The names of other successful candidates shall be published in the order in which they were registered for the examination.

Pass Certificates.

13. A certificate signed by the Registrar shall be given to each successful candidate at an examination other than an examination for a degree, title or diploma. The certificate shall set forth the date of the examination, the subject in which the candidate was examined, the class in which he was placed, and the subjects, if any, in which he gained distinction in accordance with the Regulations.

Diplomas.

14. A Diploma under the seal of the University and signed by the Vice-Chancellor shall be presented at a Convocation to each successful candidate at an examination for a degree, title or diploma. The diploma shall set forth the date of the examination, the subjects in which the candidate was examined, the class in which he was placed, and the subjects, if any, in which he gained distinction in accordance with the Regulations.

CHAPTER XXXVII.

Fees.

1. Candidates for Examinations, Diplomas and Degrees shall pay the following fees :—

Statute. **Examination Fees.**

(a) Examination fees :	Rs.
Matriculation Examination ...	15
English Part Only ...	5
Intermediate Examination—	
Whole Examination ...	30
Part I only ...	12
Part II only ...	10
Part III only ...	20
For one subject under Part III ...	8
For each science subject under Part III in which a practical test has been prescribed, an additional fee of ...	3
B. A. Degree Examination—	
First appearance—	
Whole Examination or any Part or Parts...	50
Subsequent appearance—	
Whole Examination ...	50
Part I ...	22
Part II ...	12
Part III ...	28
B. A. (Honours) Degree Examination—	
Preliminary ...	15
Final ...	70
M. A. Degree Examination ...	70
B. Sc. Degree Examination—	
Part I ...	15
Part II ...	45
B. Sc. (Honours) Degree Examination—	
Part I ...	15
Part II—Any Branch ...	75
(For all candidates, including post-graduate course students under Regulations 18 and 19 of Chapter L.)	
Science Subjects (Physics, Chemistry or any Natural Science Subject)—	
Subsidiary Subject or Subjects ...	30
Main Subject ...	45

	Rs.
M. Sc. by Examination ...	150
B. Sc. (Ag.) Degree Examination—	
First Examination ...	30
Second Examination ...	40
Final Examination ...	50
Subsequent appearance—	
For each subject for any Examination ...	15
B.V.Sc. Degree Examination—	
Preliminary Examination ...	25
Intermediate Examination—Part I ...	30
Intermediate Examination—Part II ...	30
Final Examination ...	50
Subsequent appearance (in subjects)—	
For each subject in the Preliminary or Intermediate Examination ...	15
For each subject in the Final Examination.	20
B.Sc. (Tech.) Degree Examination—	
Whole Examination ...	125
Part I only ...	50
Part II only ...	75
Subsequent appearance (in subjects)	
For each subject under any Part ...	10
B.T. Degree Examination ...	25
B.T. Degree Examination—Practical Test for deferred candidates ...	10
B.T. Degree Examination—Additional Subject (including Practical test) ...	15
M.Ed. Degree Examination ...	50
Subsequent appearance—	
Written papers only ...	35
Thesis only ...	20
B.L. Degree Examination—	
F.L. Examination ...	50
For each Division ...	25
B.L. Degree Examination ...	70
For each Division ...	25
M.L. Degree Examination ...	150
LL.D. Degree ...	250
Pre-Registration Examination (for the M.B. & B.S. Degree Course)—	
First appearance—either whole or in Part...	30
Subsequent appearance—Each subject ...	15

	Rs.
M.B. & B.S. Degree Examination—	
First M.B. & B.S. Examination—	
Whole Examination ...	55
Part I only ...	20
Part II only ...	40
Separate subjects after first appearance—	
Part I—Organic Chemistry ...	20
Part II—Anatomy or Physiology ...	25
Second M.B. & B.S. Examination—	
Whole Examination ...	60
Part I only ...	25
Part II only ...	45
Separate subjects after first appearance—	
Part I—Pharmacology ...	25
Part II—Hygiene and Preventive Medicine or General Pathology with Bacteriology ...	25
Final M.B. & B.S. Degree Examination—	
First appearance—	
Whole Examination ...	85
Part I only—Forensic Medicine and Ophthalmology ...	35
Part II only ...	60
Separate subjects after first appearance—	
Part I—One subject (Forensic Medicine or Ophthalmology) ...	20
Part II—One subject (Medicine, Surgery, or Obstetrics and Gynaecology)	25
M.D. or M.S. Degree Examination ...	200
Diploma in Gynaecology and Obstetrics ...	75
Diploma in Venereology ...	75
Diploma in Dermatology ...	75
Diploma in Ophthalmology ...	75
Diploma in Oto-Rhino-Laryngology— Whole Examination ...	75
Do. Part I ...	30
Do. Part II ...	45
Diploma in Radiology-Whole Examination...	75
Do. Part I ...	30
Do. Part II ...	45
Diploma in Orthopaedics ...	75
Diploma in Tuberculosis ...	75

		Rs.
B.S.Sc. Degree Examination—		
Part I	...	60
Part II	...	100
B.Sc. (Pharmacy) Examination—		
Preliminary Examination—		
First appearance	...	35
Subsequent appearance—Each subject	...	10
Final Examination—		
First appearance	...	50
Subsequent appearance—Each subject	...	20
B.Sc. (Nursing) Examinations—		
Intermediate Examination in Science in Nursing	...	35
Subsequent appearance—		
Part I only	...	12
Part II only	...	15
Part III only	...	20
B.Sc. (Nursing) Degree Examination—		
Whole Examination	...	75
Subsequent appearance—		
Part I only	...	10
Part II only	...	30
Part III only	...	40
B.E. Degree Examination—		
First B.E. Examination	...	30
Second B.E. Examination	...	40
Third B.E. Examination	...	45
Final B.E. Degree Examination	...	60
Subsequent appearance in any subject in any examination	...	10
B. Com. Degree Examination—		
Part I	...	15
Part II	...	7
Part III	...	38
B. Com. (Honours) Degree Examination—		
Part I	...	15
Part II	...	70
Oriental Titles Examination—		
Entrance Test to the following Oriental Titles—		
Vidvan, Adib-i-Fazil, Malpan and Soppar and Titles in Arabic and Persian	...	10

Entrance Test for Intermediate—		Rs.
Group D	...	15
Oriental Titles—		
Preliminary Examination	...	25
Final Examination	...	30
B.O.L. (Pass) Degree Examination—		
Part I	...	15
Part II	...	35
B.O.L. (Honours) Degree Examination—		
Preliminary	...	15
Final	...	70
Sangitha Siromani Title—		
Preliminary—		
Whole Examination	...	25
Parts I and III for candidates under Regulation 9 of Chapter LVII	...	25
Part II only	...	10
Final—Whole Examination	...	35
Bachelor of Music (B. Mus.) Degree Examination—		
Whole Examination	...	50
Part I only	...	15
Part II only	...	25
Part III only	...	30
Examination for the Diploma in Economics	...	50
Examination for the Diploma in Politics and Public Administration	...	50
Examination for the Diploma in Statistics	...	50
Subsequent appearance in a Special Subject	...	15
Examination for the Diploma in Modern European Languages (French or German)	...	20
Examination for the Diploma in Librarianship—First appearance—		
Whole Examination or any Division or Divisions	...	30
Subsequent appearance—		
Whole Examination	...	30
Any Division	...	10
Examination for the Diploma in Geography	...	50
Subsequent appearance — Dissertation only	...	20

	Rs.
Examination for the Diploma in Indian Music ...	30
Subsequent appearance—Practical Test in a subject or subjects (each subject) ...	15
Examination for the Diploma in Anthropology ...	50
Examination for the Diploma in Journalism ...	50
Subsequent appearance—Shorthand or Typewriting ...	6
Examination for the Certificate in Anthropology ...	15
Examination for the Certificate in Modern European Languages (French or German) ...	15
Examination for the Diploma in Physical Education ...	50
Research Degrees :	
Degree of Master of Letters (M. Litt.) ...	150
Degree of Master of Science (M.Sc.) ...	150
Degree of Doctor of Philosophy (Ph. D.) ...	200
Degree of Doctor of Letters (D. Litt.) ...	250
Degree of Doctor of Science (D.Sc.) ...	250
(*b*) *Degree or Diploma Fee*—	
Diploma Fee (for taking Degree at a Convocation in person) ...	5
Degree *in absentia* Fee (including Diploma Fee) ...	15
M.A. Degree Fee ...	25
Diploma Fee (for Certificates and Diplomas given at a Special Meeting of the Senate) other than for Degrees taken at a Convocation ...	3
Diploma *in absentia* Fee (for Certificates and Diplomas given at a Special Meeting of the Senate) other than for Degrees taken at a Convocation ...	5

provided that the above fees shall not be levied in the case of Honorary Degrees.

Statute.
Fees from Research Students and Fellows permitted to work in the Depts. of the University.

2. Research Students and Fellows (stipendiary and non-stipendiary) permitted to study in the Departments of the University or under any Teacher of the University shall pay the following fees :—

Persons working in Arts Departments—either Rs 30 per annum or Rs. 10 per term (thrice in a year)

Persons working in Science Departments—either Rs. 45 per annum or Rs 15 per term (thrice in a year).

Statute.
Recognition or Affiliation Fee.

3. A College applying for recognition or affiliation shall pay a fee at the rate of Rs. 150/- for each member of the Inspection Commission appointed; and a College applying for approval in courses in Oriental Titles shall pay a fee at the rate of Rs. 50/- for each member of the Commission appointed.

Statute.
Registration of Graduates Fee.

4. Graduates applying for Registration in the List of Registered Graduates shall pay a fee of Rs. 5.

5. *Other Fees*—

The following are the other fees prescribed :—

Ordinance.
Fees for Matriculation, Diploma courses, etc.

	Rs.
I. (1) For registration as a Matriuclate ...	5
(2) For registration as a candidate for the M. Litt., M. Sc. or Ph. D. Degree ...	50
(3 (*a*) For registration as a student for any of theDiploma Courses in Medicine or Surgery (inclusive of attending lectures under (*b*) and (*c*) *infra*) : (*b*) Prescribed fee payable to the University in connexion with the Course of Post-Graduate Lectures in Medicine or ... Surgery arranged by the Council of Post-Graduate Medical Education: and/or (*c*) Prescribed fee payable to the University in connexion with the Refresher Courses arranged by the Council of Post-Graduate Medical Education.	100

	Rs.
(3-A) For attending a part course specified in clause (3) above comprising one specific subject or branch in Medicine ...	50
(4) For applying for admission to the B. Sc. (Tech.) Degree Course ...	5
(5) For undergoing the B. Sc. (Tech.) Degree Course ...	200 per year or Rs. 75 per term
(6) For undergoing the Diploma Course in Economics (two years course—Rs 100)	50 per year
(7) For undergoing the Diploma Course in Economics (one year course) ...	100
(8) For undergoing the course of lectures in one or more subjects for the Diploma Course in Economics (for each subject)...	25
(9) For undergoing the Diploma Course in Politics and Public Administration (two years course—Rs. 100) ...	50 per year
(10) For undergoing the course of lectures in one or more subjects for the Diploma Course in Politics and Public Administration (for each subject) ...	25
(11) For undergoing the Diploma Course in Statistics (two years course—Rs. 100) ...	50 per year
(12) For undergoing the course of lectures in one or more subjects for the Diploma Course in Statistics (for each subject) ...	25
(13) For undergoing the Certificate Course in French or German (one year course) ...	60

provided, however, it shall be competent for the Syndicate to admit certain classes of applicants under the conditions enumerated in the proviso to Regulation 45 of Chapter LXXVII, at a concession rate of Rs. 45/-per candidate.

		Rs.
(14)	For undergoing the Diploma Course in French or German ...	60 per year
	provided, however, it shall be competent for the Syndicate to admit certain classes of applicants under the conditions enumerated in the proviso to Regulation 45 of Chapter LXXVII, at a concession rate of Rs. 45/-per candidate.	
(15)	For undergoing the Diploma Course in Librarianship (one year course) ...	60
(16)	For undergoing the Diploma Course in Geography (one year course) ...	100
(17)	For Field Work by students of the Diploma Course in Geography ...	25
(18)	For undergoing the lectures in one or more subjects for the Diploma Course in Geography (for each subject) ...	25
(19)	For undergoing the Diploma Course in Indian Music (two years course—Rs. 75)	37½ per year
(20)	For undergoing the lectures in one or more subjects for the Diploma Course in Indian Music (for each subject) ...	25
(21)	For undergoing the Certificate Course in Anthropology (One year course) ...	50
(22)	For undergoing the Diploma Course in Anthropology (two years course—Rs. 100) ...	50 per year
	Field work ...	25
(23)	For undergoing the Diploma Course in Journalism (one year course) ...	100

Ordinance.
Other Fees for getting Marks, certificates, etc.

II. (1) (*a*) (i) For considering application for exemption from the production of attendance certificates (Applications from students studying in Constituent or Affiliated or Oriental Colleges or University Departments).. 10

	Rs.
Provided, however, it shall be competent for the Syndicate to waive the payment of the above fee for exemption in cases where the candidates could not produce the prescribed certificates of attendance owing to the reduction of the College to a lower grade (voluntary or otherwise), or the closing down of the College, or the College not having been granted the necessary recognition or affiliation in time.	
(ii) Application for exemption from candidates after private study (non-collegiate) for Oriental Titles Examination, Preliminary/Final, for Entrance Test to Oriental Titles and for Entrance Test for Intermediate—Group D (*vide* Ordinances 3 and 4 of Chapter XXXV, Regulation 9 (h) and (j) (iv) of Chapter XL and Regulation 1 (*a*) (4) of Chapter XLII) ...	15
(iii) Application for exemption from candidates after private study (non-collegiate) for all Examinations other than Oriental Titles and Entrance Test to Oriental Titles and for Intermediate--Group D, *viz.*, Matriculation, Intermediate, B.A., B.Sc. (Honours), M.A., B.O.L. (Pass and Hons.) or other Examinations ...	25
(b) For scrutiny of applications under Ordinance 1 (b), (c) and (d) of Chapter XLI—Matriculation Examination ...	10
(2) For considering application for recognition of an examination of another University or examination conducted by other Bodies outside the jurisdiction of the University ...	5
(3) For considering application for combination of attendances earned by a candidate in two colleges ...	5
(4) For scrutiny of Secondary School-Leaving Certificates of candidates who sat for the examination prior to 1926, and of	

	Rs.
those who sat for the examination within the Madras Presidency and outside the University area ...	5*
(5) For scrutiny of Madras European High School-Leaving Certificates of candidates who sat for the examination prior to 1927, and of those who sat for the examination outside the University area after 1927 ...	5
(6) For scrutiny of Bangalore European High School Certificates of candidates who sat for the examination prior to 1933 ...	5
(7) For considering application for recognition of change of name ...	10
(8) For endorsing in the University records in regard to the change in the date of birth, whether due to clerical error or otherwise ...	10
(9) For obtaining a duplicate Diploma or Certificate ...	10
(10) For obtaining a Provisional Certificate ...	5
**(11) For application for Intermediate Certificate received by the Registrar after the prescribed date ...	3
(12) For application for Certificates and Diplomas (other than Intermediate) received by the Registrar one year after the examination ...	3
(13) For application for Certificates and Diplomas received by the Registrar five years after the examination ...	10
(14) For obtaining a Migration Certificate ...	5
(15) *(a)* For issue of a certified extract from Convocation Reports ...	5
(b) For issue of a certified extract from the Eligible List, (S S. L. C. or E.S.L.C. or E.H.S. Examination) ...	5
(16) For issue of a certified extract from the Registers or Records of the University	

*Also for scrutiny of Certificates with Shorthand or Typewriting as optional, from the examination of 1932.

**Dates will be notified in the *Fort St. George Gazette* when publishing the results.

(other than from the Convocation Reports and Eligible Lists) ... 2

(17) (*a*) For furnishing to a candidate a statement of marks obtained by him at the Intermediate Examination on each occasion (March 1945 *et seq.*) 1

(*Note*:—This fee of Re. 1/- should be paid by all candidates appearing for the Intermediate Examination along with their examination fees.)

(*b*) For furnishing to a candidate a statement of marks obtained by him at the B. A. Degree Examination, for each Part ... 2

(*c*) For furnishing to a candidate a statement of marks obtained by him at any examination other than the Intermediate and the B. A. Degree Examinations ... 2

(*d*) For furnishing to a candidate detailed marks obtained by him at each examination—for details of each subject comprising a minimum (additional fee) ... 1

(*e*) For furnishing to a candidate a statement of marks obtained by him at the Intermediate Examination for each appearance (whether for a Part or Parts or for the Whole Examination) at examinations prior to March 1945 or for furnishing duplicate statement of marks for each appearance ... 2

(18) For checking the addition of the marks in each paper of a candidate for any University Examination (for each paper) ... 10

(19) (*a*) For supplying to Principals of Colleges marks of all the successful candidates at the Matriculation and Intermediate Examinations (for each examination of the year) ... 20

(*b*) For supplying to Principals of Colleges marks of all the candidates (passed and failed) from a particular College for the B.A., B.Sc., B.A. (Hons.), B.Sc. (Hons.), F.L., B.L., M.B. & B. S., B.T., F.E., B.E., B.Sc. Ag., or any other examination *for fifty candidates, or less*	Annas 8 per candidate subject to a maximum fee of Rs. 10 for an examination, for fifty candidates or less.
(*c*) For supplying to Principals of Colleges detailed marks in each subject comprising a minimum (for each candidate) ...	1

CHAPTER XXXVIII.

Dates for Payment of Examination Fees and Submission of Certificates, Dates of Commencement of Examinations, and Dates of Publication of Results of Examinations.

Ordinance.
Dates of Examinations, dates of submission of applications and attendance certificates, and dates of publication of results.

The latest dates on which fees for examinations shall be payable, and applications for admission thereto and certificates to be produced by candidates are to be submitted to the Registrar in the forms prescribed, the dates on which examinations shall begin, and the dates on which the results of the examinations shall be published at the University Buildings shall be :—

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
Arts and Science— Matriculation ...	December 15 ...	March 9 ...
Intermediate ...	January 10 ... or July 5 ...	March 9 ... or August 15 ...
*B.A. Part I ...	January 10 ... or July 5 ...	March 9 ... or August 15 ...
" Part II ...	Do. ...	Do. ...
Part III ...	Do. ...	Do. ...
B.A. (Hons.) Preliminary	January 10 ... or July 5 ...	March 9 ... or August 15 ...
B.A. (Hons.) Final ...	December 15 ...	March 9 ...
M.A.	Do. ...	Do. ...
*B.Sc. Part I ...	January 10 ... or July 5 ...	March 9 ... or August 15 ...
Part II ...	Do. ...	Do. ...
B.Sc. (Hons.)— Part I	January 10 ... or July 5 ...	March 9 ... or August 15 ...
Part II (Main)	December 15 ...	March 9 ...
*Part II (Subsidiary)	January 10 ... or July 5 ...	March 9 ... or August 15 ...
M.Sc. or M. Litt. ...	January 31 ... or August 31 ...	... ...
Ph.D.	January 31 ... or August 31 ...	... ...

**Note*:—Particulars regarding the dates of commencement of examin-
and Part II—Subsidiary Subjects (only) of the B.Sc. (Honours) Degree
published.

Date of commencement of examinations.	Last date of publication of results.
March 20 ...	3rd Monday in May
March 20 or September 1 ...	3rd Monday in May or October 5
March 20 or September 1 ...	4th Monday in May or October 5
Immediately after the examination in Part I	Do.
Immediately after the examination in Part II	Do.
March 20 or September 1 ...	4th Monday in May or October 5
March 20 ...	2nd Monday in May
Do. ...	Do.
March 20 or September 1 ...	4th Monday in May or October 5
Immediately after the examination in Part I	Do.
March 20 or September 1 ...	4th Monday in May or October 5
March 20 ...	3rd Monday in May
Same days as for B.A. and B. Sc. Subsidiary Subjects.	4th Monday in May or October 5
...	...
...	...
...	...
...	...

ations in Parts II and III of the B. A. Degree, Part II of the B. Sc. Degree, will be notified in the *Fort St. George Gazette* when the time-tables are

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
D. Litt. or D. Sc. ...	January 31 ... or August 31 ...	... ...
Law— F.L. and B.L. ...	January 15 ... or July 15 ...	April 1 ... or September 10 ...
M.L.	January 15 ...	...
LL.D.	January 31 ... or August 31 ...	... ...
Medicine— Pre-Registration Examination	October 8 ... or Janurary 15 ...	December 1 ... or March 20 ...
M.B. & B.S.— First and Second Examinations	Do. ...	November 20 ... or March 20
Final Examination ...	Do.	Do.
M.D. or M.S ...	January 15 ...	January 15 ...
Diploma in Gynaecology and Obstetrics	January 15 ... or July 15 ...	January 15 ... or July 15 ...
Diploma in Venereology	Do. ...	Do. ...
Diploma in Dermatology	Do. ...	Do. ...
Diploma in Ophthalmology ...	Do. ...	Do. ...
Diploma in Oto-Rhino-Laryngology ...	Do. ...	Do. ...
Diploma in Radiology	Do. ...	Do. ...
Diploma in Orthopaedics	Do. ...	Do. ...
Diploma in Tuberculosis	November 15 or June 1 ...	January 5 ... or July 5 ...

Date of commencement of examinations.	Last date of publication of results.
...	...
...	...
April 15 or September 25 ...	2nd Monday in June or 2nd Monday in November
July 15 ...	1st Monday in September
...	...
...	...
December 10 or April 1 ...	January 5 or 3rd Monday in April
December 1 or April 1 ...	December 20 or April 20
Do.	December 20 or May 1
April 1 ...	May 1
April 1 or October 15 ...	May 1 or November 15
Do. ...	Do.
Do. ...	Do.
Do. ...	Do.
Do. ...	Do.
Do. ...	Do.
Do. ...	Do.
January 15 or July 15 ...	February 15 or 2nd Monday in August

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
B.S.Sc.—		
Part I	December 1 ... or March 1 ...	January 5 ... or April 5 ...
Part II ...	June 1 ... or October 15 ...	July 5 ... or November 10 ...
B.Sc. (Pharmacy)—		
Preliminary ...	October 8 ... or January 15 ...	December 1 ... or March 20 ...
Final ...	January 15 ... or October 8 ...	March 20 ... or December 1 ...
B.Sc. (Nursing)—		
Intermediate Examination in Science in Nursing	January 15 ... or ... July 15 ...	March 20 ... or October 1 ...
B.Sc. Degree (Nursing)—Final Examination in Nursing ...	January 15 ... or ... July 15 ...	March 20 ... or October 1 ...
Engineering—		
F. E. and B. E. (*Old Regulations*) ...	January 15 ...	March 9 ...
F. E. (*Revised Regulations*)—		
Part I ...	January 15 ...	March 9 ...
Part II ...	Do. ...	Do. ...
B.E. Degree (*Revised Regulations*)—		...
Part I ...	January 15 ...	March 9 ...
Part II ...	Do. ...	Do. ...

Date of commencement of examinations.	Last date of publication results.
January 15 ... or April 15 ...	1st Monday in February or 1st Monday in May
July 15 ... or November 20 ...	2nd Monday in August or December 20
December 10 ... or April 1 ...	January 5 or May 1
April 1 ... or December 10 ...	May 1 or January 5
April 1 ... or October 15 ...	May 1 or November 15
April 1 ... or October 15 ...	May 1 or November 15
March 20 ...	1st Monday in May
March 20 ...	1st Monday in May
Immediately after Part I ...	Do.
March 20 ...	1st Monday in May
Immediately after Part I.	Do.

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
Engineering *(New Regulations)*—		
First B.E. ...	January 15 ...	March 9 ...
Second B. E. ...	Do. ...	Do. ...
Third B. E. ...	Do. ...	Do. ...
Final B. E. Degree ...	Do.	Do.
Teaching— B. T.	January 15 ... or July 5 ...	March 19 ... or August 15 ...
*Practical Test (for deferred candidates) ...	...	...
M. Ed. ...	January 15 ...	March 19 ...
Agriculture—		
B. Sc. (Ag.)— ...		
First Examination...	January 15 ...	March 19 ...
Second Examination	Do. ...	Do. ...
Final Examination...	Do. ...	Do. ...
Veterinary Science—		
B.V. Sc. *(Old Regulations)*—		
Preliminary Examination.	March 1 ... or September 1 ...	March 15 ... or September 15 ...
Intermediate Examination—Part I ...	Do. ...	Do. ...
Intermediate Examination—Part II ...	Do. ...	Do. ...

*(Note:—The first test for the students will be conducted by the

Date of commencement of examinations.	Last date of publication of results.
March 20 ...	1st Monday in May
Immediately after First B.E. Examination	Do.
March 20	Do.
Immediately after Third B. E. Examination	Do.
April 1 ... or September 1 ...	4th Monday in May or October 5
First week of March ...	...
April 1	4th Monday in May
April 1 ...	3rd Monday in May
Do. ...	Do.
April 8 ...	Do.
April 1 ... or October 1 ...	2nd Monday in May or 1st Monday in November
Do. ...	Do.
Do. ...	Do.

Colleges in February *vide* Rgulation 4 (b) of Chapter LXX.)

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
Final Examination ...	March 27 ... or September 15 ...	April 8 ... or October 1 ...
B.V.Sc. (*Revised Regulations.*)—		
Preliminary Examination ...	March 1 or September 1	March 15 ... or September 15 ...
Intermediate Examination—Part I	Do.	Do. ...
Intermediate Examination—Part II	Do.	Do. ...
Final Examination ...	May 15 or November 15	June 1 ... or December 1 ...
B.Sc. (Tech.)—		
Part I ...	January 15 ...	March 19 ...
Part II ...	Do. ...	Do. ...
B. Com.—		
Part I	January 10 ... or July 5 ...	March 9 ... or August 15 ...
Part II ...	Do. ...	Do. ...
Part III ...	Do. ...	Do. ...
Oriental Titles—		
Entrance Test to Vidvan course.	November 15 ...	...
Preliminary ...	Do. ...	March 9 ...
Final ...	Do. ...	Do. ...

Date of commencement of examinations.	Last date of publication of results.
3rd Monday in April ... or October 15 ...	4th Monday in May or 2nd Monday in November
April 1 ... or October 1 ...	2nd Monday in May ... or 1st Monday in November ...
Do.	Do. ...
Do.	Do. ...
June 15 or December 15	4th Monday in July or 4th Monday in January ...
April 1	3rd Monday in May
Immediately after Part I ...	Do.
March 20 ... or ... September 1 ...	4th Monday in May or October 5
Immediately after the examination in Part I.	Do.
Immediately after the examination in Part II.	Do.
Same day as Part II—Second Language—Intermediate Examination in March	4th Monday in May
March 27 ...	Do.
Immediately after the Preliminary Examination.	Do.

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
B.O.L.— Part I	November 15 ... or July 5	March 9 — or August 15 ...
Part II ...	November 15 ...	March 9 ...
Part III ...	Do.	Do.
Oriental Titles— (*Revised*) *Entrance Test ...	November 15 ...	...
English Papers (Matriculation Examination) for Entrance Test for Intermediate—Group D and Sangita Siromani candidates.	Do.	...
†Preliminary	November 15 ... or July 5 ...	March 9 ... or August 15 ...
†Final ...	Do.	Do.
B. O. L. (*Revised*)— Part I	November 15 ... or July 5 ...	March 9 ... or August 15 ...
†Part II	November 15 ... or July 5 ...	March 9 ... or August 15 ...
B. O. L. (Honours)— Part I	November 15 ... or July 5 ...	March 9 ... or August 15 ...
Part II ...	November 15 ...	March 9 ...

*Also common for Entrance Test for Intermediate—Group D

†Examinations in Oriental Titles (Intermediate—Group D) and in which colleges are affiliated and candidates are appearing therefrom.

**The paper on *General Indian History* should be taken along

‡The paper on *The History of India* should be taken along

Date of commencement of examinations.	Last date of publication of results.
March 20 ... or September 1 ...	4th Monday in May or October 5
Same day as O. T. Final Examination.	4th Monday in May
Immedidately after the O. T. Final Examination.	Do.
Same day as Part II—Second Language—Intermediate Examination in March.	4th Monday in May
March 20 ...	4th Monday in May
March 27 ... or September 4 ...	4th Monday in May or October 5
Do. ...	Do.
March 20 ... or September 1 ...	4th Monday in May or October 5
**March 27 ... or September 4 ...	4th Monday in May or October 5
March 20 ... or September 1 ...	4th Monday in May or October 5
‡March 20 ...	4th Monday in May

candidates.
B.O.L. (Pass) Part II will be held in September only in such languages

with the B.A. Group (iv-a) candidates on the same day.
with the B.A. (Hons.) Branch III candidates on the same day.

Examinations.	Last date for receipt of applications, together with the receipt of payment of fees, in the Registrar's Office.	Last date for submitting certificates.
M. O. L.	January 31 ... or August 31 ...	... ...
Sangita Siromani—		
Preliminary—		
Part I ...	November 15 ...	March 9 ...
Part II ...	Do ...	Do. ...
Part III ...	Do ...	Do. ...
Final—		
Part I ...	Do. ...	Do. ...
Part II ...	Do. ...	Do. ...
†Diploma in Economics...	January 15 ...	March 19 ...
Diploma in Politics and Public Administration	January 15 ...	April 15 ...
Diploma in Statistics ...	March 15 ...	April 15 ...
Certificate in French ...	January 15 ...	April 10 ...
Diploma in French ...	Do ...	Do. ...
Certificate in German ...	Do ...	Do. ...
Diploma in German ...	Do ...	Do. ...
Diploma in Librarianship.	January 15 ...	April 1 ...
*Diploma in Geography.	January 15 ...	April 1 ...
Diploma in Indian Music.	January 15 ...	April 1 ...
Certificate in Anthropology	January 15 ...	April 10 ...
Diploma in Anthropology	Do. ...	Do. ...
Diploma in Journalism	November 15 ...	January 5 ...

† Last date for submission of Thesis, July 1.
* Last date for submission of Dissertation, May 15.

Date of commencement of examinations.	Last date of publication of results.
...	...
...	...
March 20 ...	4th Monday in May
Same day as for Intermediate Part II	Do.
Immediately after the Examination in Part II	Do.
March 20 ...	4th Monday in May
Immediately after the Examination in Part I	Do.
July 10 ...	3rd Monday in August
July 10 ...	3rd Monday in August
July 10 ...	3rd Monday in August
April 25 ...	2nd Monday in June
Do.	Do.
April 26 ...	Do.
Do.	Do.
April 20 ...	4th Monday in May
April 10 ...	June 15
April 10 ...	4th Monday in May
April 25 ...	1st Monday in June
April 27 ...	Do.
January 15 ...	February 15

Provided that applications for admission to examinations received within a period of five days after the dates specified above will be accepted on payment of a fee of Rupee one per candidate.

Provided further that if any of the dates under columns 2 to 5 *supra* happen to be holidays, the next working day shall be considered as the due date for the purpose enumerated under each of the columns.

Provided also that it shall be competent for the Registrar to publish the results on any day succeeding the dates mentioned only when it has been found necessary to postpone publication beyond the dates prescribed, after giving notice in the newspapers.

Provided also that :—

(1) In the case of the March-April Examinations Thursday, Friday and Saturday before Easter Day and Easter Monday and Easter Tuesday, shall be *dies non*.

(2) The Syndicate shall so fix the dates of the several examinations as to avoid, as far as may be practicable, the setting of duplicate sets of question papers in the same subject.

(3) The dates of commencement of all examinations and time-tables in detail shall be published in the *Fort St. George Gazette* by the Syndicate in the preceding February or August.

CHAPTER XXXIX.

Transfer and Term or Annual Certificates.

(Regulations)

Transfer Certificates.

1. No student who has previously studied in any recognized school or college shall be admitted to a college unless he presents a transfer certificate showing—

(a) the name of the student in full,

(b) the date of birth as entered in the admission register,

(c) the dates on which he was admitted to and on which he left the institution,

(d) the class in which he studied at the time of leaving it,

(e) the subjects or portions thereof studied by him while enrolled,

(f) if it be the time when annual promotions take place, whether he is qualified for promotion to a higher class,

(g) that he has paid all fees or other moneys due to that institution in respect of the last term in which he was enrolled, and a certificate of Medical Inspection, if any, from the school in which he last studied, and

(h) reasons for leaving college.

(*N. B.*—Clause (*h*) must be filled in when the Transfer Certificate is sent to the Syndicate of the University under Regulation 4 of this Chapter.)

No student shall be enrolled pending the production of such certificate. Every such certificate shall be endorsed with the admission number under which the student is enrolled and shall be filed for reference and inspection.

Certificates of Medical Inspection.

2. A student admitted to a college shall be required to undergo a Medical Inspection within the first term of the first year of the Intermediate Course and a re-inspection during the first term of the Junior B. A. Course and the first term of the first year of the B. A. (Honours), B. Sc. (Pass) or B.Sc. (Honours) Course. A student proceeding from one college to another shall be

required to produce, along with his Transfer Certificate, the Medical Certificate given in the previous college. Before admission to the B.A. (Pass or Honours) or B.Sc. (Pass or Honours) Course the student shall be required to produce his Certificate of Medical Inspection given during the Intermediate Course.

Such Medical Inspection shall be conducted by a doctor possessing the University qualification of L.M. & S., or M.B. & B.S., or a registrable British qualification.

In a case where a college has difficulty in arranging for Medical Inspection, a report should be made to the Syndicate by the college in question.

Issue of transfer certificates.

3. A student applying for a transfer certificate during a college term on any day of which he has been enrolled, or applying not later than the fifth working day of the college term immediately following, shall forthwith be given such certificate upon payment of all fees or other moneys due, or of such portion thereof as the Principal may see fit to demand, for the college term in which he was enrolled.

A student applying for such certificate after the fifth working day of the college term immediately following that during which he has been last enrolled shall forthwith be given it on payment of (1) all fees or other moneys due, or of such portion thereof as the Principal may see fit to demand, in respect of the college term in which he was last enrolled, and (2) an additional fee of Rs. 3 at the option of the Principal:

Provided that, when a student has been enrolled at favourable fee rates, he shall be liable for such rates only.

No student shall be considered to have been enrolled in any college term unless he has attended the college and received instruction for at least one day of that college term or has paid the fees or portions thereof prescribed.

In the case of a student who has been a candidate for a University Examination, the results of which have not been published before the beginning of the college term, the eleventh day after the results of that examination have been announced at the Senate House* shall be counted for

*or in the Building in which the Office of the Registrar, University of Madras, is located.

him the first working day of the college term so far as the grant of a transfer certificate is concerned.

In the event of the Principal refusing or delaying to give a transfer certificate to which a student may be entitled the student shall have right of appeal to the Syndicate.

Expulsion of student from College.

4. If any student is expelled from a Constituent or an Affiliated College, intimation of the fact of expulsion, with a statement of the reasons therefor, shall be given forthwith by the Principal (a) to the parent or guardian of the student, and (b) to the Syndicate; intimation to the Syndicate shall be accompanied by the transfer certificate of the student. The Syndicate, on the application of the student or his parent or guardian, may, after making such enquiry as it deems proper, deliver the certificate to the student with any necessary endorsement or withhold it temporarily or permanently.

Academic year.

5. The academic year for Colleges affiliated or recognised in Arts, Science, Teaching and Law shall consist of three terms, which shall ordinarily begin and end as follows:—

First term—June to September, closing with the Michaelmas holidays.

Second term—October to December, closing with the Christmas holidays.

Third term—January to April, closing with the Summer holidays.

Combination of attendances.

6. A student shall ordinarily qualify for the annual certificate in one and the same college, but in special cases the Syndicate may allow attendance in different colleges to be combined for purposes of the annual certificate.

7. A student in the Arts or Science courses desirous of transfer from one college to another shall apply to the Syndicate for permission to combine attendances at the two colleges, for purposes of the annual certificate. Such

applications shall be submitted in every case prior to making the desired transfer and shall furnish valid reasons for the change proposed. This rule applies to a transfer during a term as well as to a transfer at the end of an academic year when an additional term is proposed to be kept in a different college. An application to combine attendances shall invariably be accompanied by (i) the written consent to the proposed transfer of the Principal of the College in which the student is studying and (ii) the written promise of admission from the Principal of the College which he proposes to join, together with an assurance countersigned by the latter Principal that the student, if permitted by the Syndicate to combine attendances, will, in the main, be able to continue in his college the course of study already commenced by the student under each part of the examination.

In the case of a student in Arts or Science who has been permitted to combine attendances in two colleges, the annual certificates will be accepted as satisfying the Regulations, provided the student has kept either,

(a) three quarters of the possible attendances in each college before and after his transfer respectively,

or

(b) three quarters of the combined total of possible attendances in the two colleges taken together.

Conditions of grant of annual certificate.

8. In colleges affiliated or recognised in Arts, Science, Teaching and Law, the grant of the annual certificates shall be in respect of three terms ordinarily consecutive comprising one year; but it shall be competent for the authorities of a college to grant such certificate in respect of three terms which are not consecutive, provided that the student has during those terms completed the necessary courses of study for the year.

9. The grant of the annual certificate shall be subject, in addition, to the following conditions:—

(1) In colleges affiliated or recognised in Arts, Science, Teaching and Law, the certificate shall not be granted unless a student has kept three-fourths

of the attendances prescribed by the college in the course of instruction followed by him during the year, and in Institutions approved by the Syndicate under the Regulations for Titles, Certificates of Proficiency and Degree in Oriental Learning, unless he has kept three-fourths of the attendances prescribed by the institution in the particular course of study for which the certificate is issued.

(2) In colleges of Science, the certificate shall not be granted unless a student has kept three-fourths of the attendances prescribed by the college in the course of instruction followed by him during the year, in colleges of Medicine unless he has attended fourth-fifths of the lectures in each course, and in colleges of Engineering unless he has kept three-fourths of the attendances prescribed by the college.

(3) The certificate shall not be granted unless the student has completed the course of instruction to the satisfaction of the authorities of his college and his progress and conduct have been satisfactory.

Students for want of progress certificate to undergo additional instruction.

10. In the Intermediate or the B.A. (Pass) Degree Course a student who has failed to earn the progress certificate at the end of the first year's course shall be required to rejoin the first year class for another full year.

A student who has not been selected for the March—April University Examination but who at the close of the academic year is certified by the Principal to have made such satisfactory progress that he may be admitted to the examination, may appear for a subsequent examination without further attendance at a college, provided that he has earned the necessary attendance certificate.

A student who has failed to earn the progress certificate for the second academic year must attend college to receive such additional instruction as the Principal may,

in his discretion, prescribe so as to enable him to earn the required progress certificate.

11. The Regulations governing attendance and progress and combination of attendance shall apply *mutatis mutandis* to students in the Faculty of Law.

Forms of Certificates.

12. The certificates shall be drawn up in the prescribed forms (*vide* **Annexure I**)

CHAPTER XL.

Admission to Examinations and Exemption from Annual or Term Certificates.

(Regulations and Ordinances)

Regulation. **Admission to Examination only after Matriculation.**

1. Only persons whose names are contained in the Register of Matriculates shall be admitted to any examination other than the Matriculation Examination.

Regulation. **Registration of application.**

2. Before being admitted to an examination a candidate must have been registered therefor. A candidate shall be registered afresh on each occasion on which he wishes to present himself for an examination and a candidate shall be registered only after he has submitted an application in the prescribed form and paid the fee prescribed.

Regulation. **Conditions for admission—preliminary qualification.**

3. Every candidate for an examination shall produce evidence of having previously passed the qualifying examination prescribed by the Laws, if any.

Regulation. **Production of attendance certificates.**

4. He shall also, unless exempted by a special order of the Syndicate made either on the recommendation of the Academic Council or as otherwise provided under the Laws, produce in the prescribed form the certificate or certificates required by the Laws of the University.

Regulation. **Admission to Examination only on production of certificates.**

5. No candidate shall be permitted to sit for an examination unless his annual (term) certificates of attendance, conduct and progress or the order of exemption granted to him have been received by the Registrar *before the commencement of the examination.*

Ordinance. **Exemption from attendance certificate—Matriculation Examination.**

6. In the case of the Matriculation Examination, the Syndicate may grant exemption from the production of the prescribed certificate of attendance to—

(1) A candidate who has attained the age of twenty years on the first day of March in the year in which he appears for the examination.

(2) A *bona fide* teacher, provided (*a*) he has completed a course of study in the Third Form (or the equivalent thereto in the case of courses of study other than the S.S.L.C. course) and has qualified for promotion to the higher class and (*b*) satisfies the conditions laid down in Regulation 9 (*j*) of this Chapter.

(3) A candidate who produces evidence of having qualified for promotion to the Fourth or higher Form (or the equivalent thereto in the case of courses of study other than the S.S.L.C. course) shall be considered for exemption. Such a candidate should receive approved instruction during the whole period prior to his proposed appearance at the Matriculation Examination which shall be not less than three years in the case of those promoted to IV Form, two years in the case of those promoted to V Form, and one year in the case of those promoted to VI Form. Satisfactory evidence should be produced that the applicant is of good character and has received suitable instruction for the period required.

Ordinance. **Conditions of admission to the O. T. Entrance Test or Entrance Test for Intermediate—Group D.**

7. A candidate who has attained the age of fourteen years and three months by the first day of March of the year of appearing for the examination may be permitted by the Syndicate to sit for the Oriental Title Entrance Test or the *Entrance Test for Intermediate—Group D* (*i.e.* Oriental Title Entrance Test and Matriculation English) of the University of Madras, without the production of any certificate of attendance.

Regulation.
Exemption—general conditions.

8. In the case of other examinations, the Academic Council may recommend the grant of special exemption by the Syndicate subject to the condition that no such application shall be granted in the case of a student studying in a college or a Department of the University, without a recommendation from the Head of the College, or the Head of the University Department in which he is a student.

9. The Syndicate may grant exemption :—

Regulation.
Grant of exemption by Syndicate.

(a) To a student studying in a college or in a Department of the University, who has failed to keep three-fourths of the attendances prescribed by the Institution or the University Department of which he is a student, and is unable to produce his annual certificate of attendance, conduct and progress, provided that—

(i) the shortage of attendance does not exceed five days; and

(ii) the Syndicate considers that the reasons given for failure to keep the prescribed attendance are satisfactory.

If the shortage of attendance exceeds five days, the exemption shall be granted only on the recommendation of the Academic Council or its Standing Committee.

Exemption to students in a language (other than English)—when and how granted.

(b) To a student studying in a college in which the language in respect of which exemption is sought is not taught, provided that the Syndicate is satisfied—

(i) as to the reasons assigned by the student for not studying in a college where the language in question is taught, and

(ii) as to the arrangements made for instruction being received by the student in that language in the following examinations :—

Name of Examination.	*Part or Group for which exemption may be granted.*
Intermediate	Part II — Second Language. One of the languages in Group B of Part III.
B.A. Degree	Part II—Second Language.

(c) To a candidate who has passed the Intermediate Examination in Arts and Science to enable him to appear again for the same examination offering a different set of optional subjects under Part III of the Intermediate course, provided he has undergone the course of study prescribed in the set of subjects selected and that he has attended a college for a further period of not less than one year. [He shall be exempted from re-examination in English and the Second Language.]

Exemption in a new subject—Intermediate Examination

(d) To a candidate who, having passed Parts I and II (New Regulations) or Part I (Old Regulations) and failed in Part III (New Regulations) or Part II (Old Regulations) of the Intermediate Examination in Arts and Science on at least two occasions in one set of optional subjects, desires to present a new set of optional subjects from the production of the first year's certificate of attendance to appear for Part III (New Regulations) of the Intermediate Examination in Arts and Science.

(e) To a candidate who, having passed Parts I and II (New Regulations) or Part I (Old Regulations) and failed in Part III (New Regulations) or Part II (Old Regulations) of the B. A. Degree Examination on at least two occasions in one set of optional subjects, desires to present a new set of optional subjects, provided that the new subjects do not require a course of laboratory training from the production of the first year's certificate of attendance to appear for Part III (New Regulations) of the B. A. Degree Examination.

Exemption—B.A. Degree Examination—new optional group.

(f) To a candidate for the B. A. Degree Examination who has passed at least one of the Divisions of the B.A. Degree Examination under the Old Bye-laws and has been permitted to appear (in accordance with the provisions of the Transitory Regulations) for the B.A. Degree Examination under the New Regulations in the Parts or Groups corresponding to the Divisions of the B.A. Degree Examination under the Old Bye-laws which he has not passed.

Exemption—B.A. Old Bye-laws and Old Regulations—students.

(*g*) To a candidate for the Final M.B. & B.S. Degree Examination who having failed in the examination is unable to produce an additional certificate of attendance for six months in one or more subjects of the examination in accordance with the Regulations, provided that he is recommended for exemption by the Principal of a Constituent or an Affiliated Medical College, in which he is studying.

Exemption—Final M.B. & B.S. Examination—Additional course.

(*h*) To a candidate from the production of either or both of the annual certificates of attendance, required for the Oriental Title Examinations, provided that he is at the time of the examination at least thirty years of age ; provided, however, it shall be competent for the Syndicate to waive a strict compliance with the age limit in the case of women candidates for a period of five years from the academic year 1944—45 :

Exemption—Oriental Title Examinations.

Provided, however, that a candidate who has already qualified for an Oriental Title shall be permitted to appear for the examination for a different Title or for a different subject in the same Title ; such a candidate shall be exempted from the necessity of passing in the Entrance Test in the new language and/or conforming to the age rule.

Notwithstanding anything contained in the above Regulation, it shall be competent for the Syndicate to allow candidates who have already been granted exemption from the production of attendance certificates with a view to appearing for any of the Oriental Title Examinations under Regulation 8 (*h*) (i) of Chapter XXXIX, Volume I, Part II, Calendar, 1942—43, to sit for any division or whole of the Oriental Title Examinations :

Provided, however, that exemption once granted prior to the introduction of new restrictions (like the age limit and passing of Entrance Test for Oriental Title private candidates) shall be valid only for Examinations under the Old Regulations.

Note—As and from the academic year 1947—48 the examinations in the Titles will be confined only to such subjects as are offered by colleges.

(*i*) To a candidate who has passed the L.M.P. Diploma Examination of the Madras Government after a five years'

course from the production of attendance certificates for both the years of the Intermediate course with a view to appearing for the Intermediate Examination in Arts and Science in order to enable him to qualify for admission to the M.B. & B.S. course under the Regulations in force for the M.B. & B.S. Degree course.

Exemption—bona fide teachers.

(j) To a *bona fide* teacher under the following conditions :—

A *bona fide* teacher employed in a School recognised by the Madras University and by the Directors of Public Instruction, Madras and Cochin, the Chief Educational Officer, Pudukottah, the Inspector of Schools, Coorg and Bangalore, the Under Secretary to the Hon'ble the Resident at Hyderabad (Deccan), or the District Educational Councils, and situated within the jurisdiction of the Madras and Annamalai Universities shall be entitled to apply for exemption.

A teacher employed in a school in the State of Sandur and Banganapalle shall also be entitled to apply for exemption provided his application is recommended by the Director of Public Instruction or corresponding officer of the State concerned.

Applications for exemption should be made by those teachers with the permission of their managements and managements should certify that the applicants are *bona fide* teachers in their respective Institutions.

Bona-fide teachers applying for exemption should have been in service as whole-time teachers for not less than three years on the date of such application.

(i) *Intermediate Examination.*

An applicant for exemption to appear for the Intermediate Examination should either have passed the Matriculation Examination of this University or an examination recognised as equivalent thereto or have been placed on the list of candidates declared eligible for admission to courses of study in this University on the results of the S.S.L.C. Examination; provided further that

he shall not be allowed to appear for the examination until two years have elapsed between the date of passing the Matriculation Examination or other qualifying examination and that of appearing for the Intermediate Examination; provided, however, that a candidate who satisfies the conditions laid down in Regulation 1 (*a*) (4) of Chapter XLII—Intermediate Examination—shall be eligible to apply for exemption to appear for the Intermediate Examination with Group D under Part III:

Provided further that a candidate who proposes to offer a science subject or subjects under Part III requiring practical training in a laboratory shall produce a certificate of having done the prescribed laboratory work from a Professor or a Lecturer of a College recognized by or affiliated to the University in the subjects concerned, countersigned by the Principal of that College:

Provided further that a candidate appearing in a science subject or subjects under Part III will be permitted to take the examination without a practical test till September 1950.

(ii) *B. A. Degree Examination.*

(*a*) Every teacher applying for exemption to appear for the B.A. Degree Examination should have passed the Intermediate Examination of the Madras University or an examination recognised as equivalent thereto; provided that he shall not be allowed to appear for the examination until two years have elapsed between the passing of the Intermediate or other qualifying Examination and appearing for the B.A. Degree Examination:

provided further that if he proposes to appear for a Science Group which requires a practical training in a Laboratory, he shall produce a certificate of having done the prescribed laboratory work from the Professor of a constituent or an affiliated first-grade college countersigned by the Principal of that college.

(*b*) Every teacher, who is a B.Sc. Degree holder of this University, applying for exemption to appear

for the B. A. Degree Examination, shall be required to take the Examination in Parts I and II (English and Second Language) only, provided, however, that if he offers one of the Humanities as an optional under Part III, he shall appear for all the three parts of the B.A. Degree Examination.

(*c*) Every teacher, who is a B.O.L. Degree holder of this University, applying for exemption to appear for the B.A. Degree Examination shall be required to take the examination in Part I (English) and Part III (any of the Humanities) only: provided, however, that it shall be competent for a Bachelor of Oriental Learning who desires to qualify for the B.A. Degree in Group (v) Languages other than English—to appear for and secure a pass in Part I (English) and Part II (Second Language) of the B.A. Degree Examination, which language shall be other than that selected as the Main Language for the B.O.L. Degree.

(*d*) Every teacher, who has qualified for the B. A. Degree of this University as a *bona fide* teacher or has qualified for the Degree as a regular student and has since become a *bona fide* teacher, applying for exemption to appear again for the B.A. Degree Examination in an additional optional subject, shall be permitted to take only a non-science subject under Part III of the examination.

(iii) *M. A. Degree Examination.*

Every teacher applying for exemption from the production of the prescribed attendance certificates for the M. A. Degree Examination shall have passed the B.A. Degree Examination of the Madras University or an examination recognised as equivalent thereto; provided that he shall not be permitted to appear for the examination until two years have elapsed between the passing of the B.A. Degree Examination or other qualifying examination and appearing for the M.A Degree Examination :

provided, further, that a teacher, who is a B.Sc. or B.O.L. Degree holder of this University and has later qualified for the B.A. Degree may be permitted to take the M.A. Degree Examination in any of the Humanities (Philosophy, History, Economics, Politics or English Language and Literature) two years after passing the B.A. Degree Examination.

(iv) *Oriental Title Examination.*

Every teacher applying for exemption from the production of the prescribed attendance certificates for any Oriental Title Examination shall have passed the Entrance Test before he is permitted to sit for the Preliminary Examination. He may be permitted to sit for the Final Examination one year after passing the Preliminary Examination.

(v) *B.O.L. Degree Examination.*

Every teacher applying for exemption to appear for the B.O.L. Degree Examination shall have passed the Intermediate Examination of the Madras University with Group D, or an examination recognised as equivalent thereto, provided that he shall not be allowed to appear for Part I of the examination until one year has elapsed and for Part II of the examination until two years have elapsed between the passing of the Intermediate or other qualifying examination and appearing for the B.O.L. Degree Examination.

(vi) *B.O.L. (Honours) Degree Examination.*

Every teacher applying for exemption to appear for the B.O.L. (Honours) Degree Examination shall have passed the B.O.L. Degree Examination of the Madras University or an examination recognised as equivalent thereto provided that he shall not be allowed to appear for Part II of the examination until two years have elapsed between the passing of the B.O.L. or other qualifying examination and appearing for the B.O.L. (Honours) Degree Examination.

(*k*) To a candidate for the B.Sc. (Honours) Degree Examination who has passed the B.A. Degree Examination in a science subject or B.Sc. Degree Examination of this University or an examination recognized as equivalent thereto, provided he has been a Demonstrator for at least two years in a First Grade or Honours College of this University in which the subject or subjects he desires to offer for the examination is/are taught for the B.A., B.Sc. or B. Sc. (Honours) Degree course on the main standard. Such a candidate shall pursue a course of study for one year in a college recognised or affiliated in the Honours course and produce the certificate of attendance and progress.

Exemption—Demonstrators appearing for B.Sc. (Hons).

10. In cases other than those specially provided for in the above Laws or in other Statutes, Regulations or Ordinances, the Syndicate may, by special order, grant exemption on the recommendation of the Academic Council. Any such exemption may be made subject to such conditions as the Syndicate may think fit.

Act and Regulation. **Other exemptions—general conditions.**

11. Applications for exemption from students not studying in a college shall in every case be forwarded so as to reach the Registrar before the first October and the first March preceding the March—April and September Examinations, provided, however, that applications for exemption from the production of attendance certificates for the examinations under Laws 7, 9 (*h*) and 9 (*j*), proviso to (i) *re* Intermediate—Group D, (iv), (v) and (vi) of this Chapter shall be forwarded so as to be received before the first August preceding the examinations.

Ordinance. **Exemption applications—when to be made.**

12. Orders of exemption granted under the preceding Laws shall be permanent.

Ordinance. **Exemption order permanent.**

13. Notwithstanding anything that may be contained to the contrary in the Laws of the University, it shall be competent for the Syndicate—

Regulation. **War Emergency Law.**

(1) with regard to students whose courses of studies, in countries involved in or affected by the War (in September 1939), have been interrupted, to dispense with a strict compliance with the Laws, as may be decided in each and every case in regard to admission to courses of studies or attendance on courses of this University or such other conditions as may be laid down in the Laws, and

(2) to grant to students of this University who have rendered approved War Service in His Majesty's Forces such concessions and dispensations from the Laws of the University as may be deemed fit and necessary in each case :

Provided, however, that it shall be competent for the Syndicate in determining 'approved service' to determine this service with regard to such applicants as have been prisoners of war in so as far as the service was approved service prior to the date on which the candidate had been taken prisoner of war.

CHAPTER XLI.

Matriculation Examination.

(Ordinances)

1. The Matriculation Examination shall be open to the following :—

(a) Candidates from schools recognised by the Director of Public Instruction, Madras, as teaching to the Matriculation standard, but not preparing for the Secondary School Leaving Certificate Examination.

(b) Candidates from schools in Indian States situated within the jurisdiction of this University and certified by the Durbars of the States concerned to be organised and conducted so as to ensure efficient training to the standard of the Matriculation Examination.

Recognition of Schools.

(c) Candidates from schools in the French Territories in South India, certified by the Director of Public Instruction, French India, to be organised and conducted so as to ensure efficient training to the standard of the Matriculation Examination.

(d) Candidates who hold completed School-Leaving Certificates issued under the authority of the Government of Madras or such other authority as may be accepted by the syndicate, in accordance with the provisions contained in Ordinance 2 *infra* and subject to the restriction therein.

Note:—For the scrutiny fee to be paid by candidates for the examination under this Ordinance *vide* Ordinance 5 II (1) (b) of Chapter XXXVII. †

Condition of admission.

2. No candidate shall be admitted to the Matriculation Examination unless he has reached the age of fourteen years and three months by the first day of March of the year of

† Rs. 10.

appearing for the examination, and has undergone a course of study in one of the High Schools specified in Ordinance 1 of this Chapter for a period of not less than one academic year subsequent to his promotion to the Sixth Form :

provided, however, that no candidate who holds a completed School-Leaving Certificate shall be permitted to appear for the Matriculation Examination until the expiry of one academic year after having completed the course of study prescribed for the School-Leaving Certificate Examination.

3. The course of study shall consist of five parts.

Course of Study. English.

(1) *English Language.*—Text-books shall be prescribed of which a detailed knowledge may be required.

(2) *A Second Language.*—One of the following languages at the option of the candidate :—

(*a*) Classical		Sanskrit. Greek. Latin.	Arabic. Persian. Hebrew. Syriac.
(*b*) Modern	(1) Foreign	French.	German.
	(2) Indian	Tamil. Telugu. Kannada. Malayalam. Urdu. Marathi.	Oriya. Hindi. Bengali. Burmese. Sinhalese.

Second Language.

In each language, there shall be prescribed text-books. In the Indian languages, the texts prescribed shall be mainly in modern prose.

Mathematics.

(3) *Mathematics.*—The subjects included shall be (*a*) Arithmetic, (*b*) Algebra, and (*c*) Geometry.

(*a*) *Arithmetic.*—The principles and processes of Arithmetic applied to whole numbers and vulgar and decimal fractions. The metric system. Approximations to a specified degree. Contracted methods of multiplication and division of decimals. Practice,

ratio and proportion. Square and cubic measure. Direct applications of the term *per cent*; including interest, present-worth and discount. stocks and shares, profit and loss, exchange, square root.

(b) *Algebra.* — Symbolical expression of general results in Arithmetic. Algebraical laws and principles and their applications. Factorization of simple functions. Equations, conditional and identical. Equations of the first degree in one, two and three variables and the principles involved in their solution. Solution of problems by means of such equations. Equations of the second degree in one variable and the principles involved in their solution. Theory of positive integral indices. Square root. Graphs of simple algebraic functions.

(c) *Geometry.— Experimental.*—Construction of lines, angles, circles, perpendiculars, parallels, tangents, chords, triangles and regular polygons from given data. Division of lines in given ratios. Bisection of angles. Graphical extraction of arithmetical square roots.

Theoretical.—Angles at a point. Parallel straight lines. Triangles and rectilinear figures. Areas, simple loci. Elementary propositions on circles. Proofs of the constructions in Experimental Geometry. Easy deductions.

A detailed syllabus in Geometry shall be prescribed.

Elementary Science.

(4) *Elementary Science.*—The subjects included shall be Elementary Physics and Elementary Chemistry as defined in a syllabus.

(5) *History and Geography—*

History—

History and Geography.

(1) Movements in History—a topic to be prescribed each year, as defined in a syllabus.

(2) History of India—a special period to be prescribed each year. Books will be recommended from year to year when the special periods are prescribed.

Geography—

(1) Geography of India, Great Britain and Ireland, as defined in a syllabus.

(2) Geography of Europe, Asia, Africa, America and Australia, as defined in a syllabus.

4. The Examination shall comprise five divisions.

Scheme of Examination.

(1) *English.*—There shall be two papers, each of three hours' duration and carrying 100 marks each. The first paper shall be mainly upon the prescribed texts and shall be designed to test the candidate's proficiency in composition and his knowledge of grammar and idiom. The second paper shall contain questions on (*a*) the non-detailed texts prescribed, (*b*) paraphrase not based on the prescribed texts, and (*c*) the conversion, expansion, and condensation of sentences. Paraphrase shall be treated as a test of the candidate's power to understand and give the general meaning of passages of prose or poetry.

(2) *Second Language.*—In each language, there shall be one paper of three hours' duration and carrying a maximum of 100 marks. The paper shall consist of two parts and not less than half the total marks shall be assigned to the second part. In a classical or foreign language, the first part shall contain passages for translation from the text-books and questions on grammar and idiom, and the second shall contain unseen

passages for translation from the selected language into English and from English into the selected language. In an Indian language, the first part shall contain questions on the detailed text-books and on grammar and idiom, and the second part shall consist of questions on the non-detailed text-books and translation from English to the selected language.

(3) *Mathematics.*—There shall be two papers—

(1) Arithmetic and Algebra ... 3 Hours. 100 Marks.

(2) Geometry ... 3 Hours. 100 Marks.

(4) *Elementary Science.*—There shall be one paper of three hours' duration carrying 100 marks.

(5) *History and Geography.*—There shall be two papers—

(1) History ... 3 Hours. 100 Marks.
(2) Geography ... 3 Hours. 100 Marks.

Marks qualifying for a pass.

5. A candidate shall be declared to have passed the examination if he obtains not less than thirty-five per cent of the marks in each of the divisions, provided that a candidate who fails to obtain the required minimum in one division only but who passes in English and gains fifty per cent of the total marks in the whole examination shall be declared to have passed. All the other candidates shall be deemed to have failed in the examination.

Classification of successful candidates.

Successful candidates who obtain not less than sixty per cent of the total marks shall be placed in the first class. Successful candidates who obtain less than sixty per cent but not less than forty-five per cent of the total marks shall be placed in the second class. Other successful candidates shall be placed in the third class.

CHAPTER XLII.

Intermediate Examination in Arts and Science.

1. The Intermediate Examination in Arts and Science shall be open to candidates who —

Admission to course.

(a) (1) have passed the Matriculation Examination of this University or of any other Indian University, or have passed a qualifying examination of any University outside India which may be accepted by the Syndicate as equivalent to the Matriculation Examination of this University; *or*

(2) have (i) completed *(a)* the S.S.L.C. Certificate issued by the Government of Madras, or Cochin, or (*b*) the E.S.L. Certificate issued under the orders of the Government of Madras or the Administration of Bangalore and Coorg; and (ii) have been declared eligible for admission to a course of study in this University; *or*

(3) have completed the S.S.L. Certificate or the E.S.L. Certificate issued under the orders of the Government of Madras and have been declared eligible for admission to a University course of study by the Andhra or Annamalai University and recognized by the Syndicate of this University; *or*

(4) have passed the *Entrance Test for Intermediate—Group D* (*i.e.* Oriental Title Entrance Test and Matriculation English at one and the same appearance) of the University of Madras; provided, however, that such candidates shall be eligible to take only Group D under Part III of the Intermediate Course; *or*

[*Note* :—Candidates who desire to be admitted to Intermediate—Group D should again sit for the whole examination (*viz*., Oriental Title Entrance Test and Matriculation

English) even though they might have passed the Oriental Title Entrance Test previously. Candidates taking the Entrance Test (Sanskrit) conducted by the Educational Department of the Government of Madras should pass that examination as well as Matriculation English in one and the same year :]

(5) have passed an examination conducted by any University, Board of Secondary Education, or other duly constituted authority in any Province or State in India and have qualified themselves in the respective examinations or have been declared eligible for admission to a University course on the results of the examination in the respective Province or Indian State, accepted by the Syndicate as equivalent to the Matriculation Examination of this University ;

and (*b*) have undergone in a Constituent or an Affiliated College a course of study in the prescribed subjects for period of not less than two academic years or six terms.

Course of Study. 2. The course shall consist of three Parts.

Part I—English.

Books shall be prescribed in English Prose and Poetry. In prescribing them, the following objects shall be kept in view :—

(*a*) the improvement of the students' knowledge of the English language and of its literature ;

(*b*) the development of their ability to extend the range of their knowledge by training them to read with ease and discrimination.

The course shall consist of—

(1) The detailed study of certain prescribed books. There shall be one play of Shakespeare, 1,000 lines of Poetry, and two Prose books.

(2) The perusal, as distinct from a detailed study, of other prescribed books. There shall be not more than three books.

Note:—The books prescribed from year to year under (1) and (2) shall be of the same average length and difficulty. Certain of the prescribed books which are to be studied in detail may be retained from year to year. The books which are prescribed for perusal under (2) shall be changed every year.

(3) Such instruction and exercise in rhetoric and composition as may be expected to develop the students' powers of understanding English and writing it clearly, concisely, and correctly. This instruction should include the following topics:—

Choice of words. The paragraph as the unit of prose composition. The sentence as a constituent portion of the paragraph. The periodic and the loose sentence. Unity, balance and emphasis in relation to paragraph and sentence. Logical sequence of sentences and paragraphs and explicit references to preceding paragraphs, as securing coherence in an essay.

Part II—A Second Language.

One of the following languages at the option of the candidate:—

(a) Classical		Sanskrit. Greek. Latin. Arabic.	Persian. Hebrew. Syriac.
(b) Modern	(1) Foreign	French.	German.
	(2) Indian	Tamil. Telugu. Kannada. Malayalam. Urdu. Marathi.	Oriya. Hindi. Bengali. Burmese. Sinhalese.

In each of the languages, text-books shall be prescribed from time to time.

The course shall comprise the study of text-books and grammar, translation, and in the case of Indian languages, original composition. The scope of the course may be indicated by the allotment of four hours a week for insrtuction.

The main object of the study of an Indian language is to train the student to use it as a vehicle of current thought.

Candidates taking Group D under Part III shall not be required to take a language under Part II, but shall answer a paper on Composition or Translation as prescribed under Part III—Group D.

Part III—Optional Subjects.

Three subjects to be selected out of the following Groups A, B and C, or Group D at the option of the candidate :—

Group A ...	Mathematics. Physics. Chemistry. Natural Science. Geology. Geography. Psychology.
Group B ...	Logic. Indian History. Ancient History. Modern History. Islamic History. A language (to be selected from the list under Part II) on a lower standard than at present laid down for Part II, if the language chosen under Part III is different from that taken under Part II, *or* on a higher standard if the same language is taken under Part III.
Group C ...	Economic History of England and Economic Geography. Elements of Commerce and Accountancy. Agriculture. Electrical Engineering. Mechanical Engineering. Surveying. Drawing. Indian Music. Western Music. Architecture. Household Art.

Group D* ... { The subjects prescribed for the Preliminary Division of the Examination for any *one* of the following Oriental Titles:—
Siromani.
Vidvan.
Afzal-ul-Ulama.
Munshi-i-Fazil.
Adib-i-Fazil.
Tabib-i-Kamil.
Afzal-ul-Atibba.
Malpan.
Soppar:
and a paper on Composition or Translation in the selected Language (Composition in the case of Indian Launguages and Translation in the case of Classical Languages.)

Any candidate, who is a member of the Madras University Officers' Training Corps, shall have the option of taking Military Science—Certificate 'A'—in place of one of the optional subjects or as an additional subject under Part III.

Candidates offering Military Science as an additional subject shall be deemed to have passed the examination in Part III if they pass in two of the three optional subjects and in Military Science.

Note:—Candidates desirous of proceeding to a Prefessional or Honours Degree Course shall satisfy the requirements laid down for admission to these courses, and may take Military Science—Certificate 'A'—as an additional subject.

The Syndicate shall have power to permit candidates who either have completed their Intermediate or their B.A. with Parts II and III in the Intermediate in Groups other than Group D of the Intermediate and desire to appear for the B.O.L. (Bachelor of Oriental Learning) to sit for the Intermediate Examination in Group D under Part III without the production of the prescribed certificates of attendance at a college approved by the University.

*To be taken by persons who desire to proceed to the B.O.L. (Pass or Honours) Degree.

Note:—Candidates who have passed the Preliminary part in an Oriental Title will not be eligible for exemption from Part III (Group D) of the Intermediate Examination.

Text-books or syllabuses shall be prescribed in the above subjects.

Scheme of Examination. 3. The examination shall consist of three parts.

(a) *Part I—English*—There shall be three papers.

		Maximum Marks.
Paper 1.—Shakespeare and Poetry (Prescribed books)—3 hours	...	100
The candidates shall not be required to answer more than five questions.		
Paper 2.—Prose (Prescribed books)—3 hours	...	100
The candidates shall not be required to answer more than five questions.		
Paper 3.—Composition—3 hours	...	100

The paper (shall contain exercises designed to test the candidates' power to apply the principles studied in the course; in particular it shall contain (a) exercises in epitomizing and paraphrasing passages of prose and poetry which shall not be taken from any of the books prescribed for detailed study or for perusal, and (b) subjects for two short essays drawn from the subject-matter of the books prescribed for perusal, as distinct from detailed study and from topics of general interest.

Note:—All papers in English shall be regarded as a test of the candidates' command of correct English and in valuation emphasis shall be placed upon this aspect of the work.

(b) *Part II—A Second Language.*

In each of the languages, there shall be two papers of three hours' duration each. Each paper shall carry a maximum of 100 marks.

The first paper shall contain questions on text-books prescribed for detailed study, grammar and idiom. The second paper shall contain in the case of classical languages and foreign languages mentioned under Regulation 2 (Part II) questions on translation from the selected language into English and *vice versa*, and in the case of the Indian languages mentioned under Regulation 2 (Part II) questions

on the books prescribed for non-detailed study, original composition, and translation from English into the selected Indian language.

(c) *Part III—Optional Subjects.*

(i) Three subjects to be selected out of the three Groups A, B and C, or Group D mentioned in Regulation 2 (Part III) of this Chapter at the option of the candidate;

provided that a candidate who wishes to proceed to a Degree in Arts or Science shall be required to pass in *two at least* of the optional subjects included in Group A or Group B;

provided that a candidate who has passed in the two commercial subjects under Group C may proceed to the B.A. Degree in Group (*iv-b*) Economics and History; and a candidate who has passed in two Fine Arts subjects, including Indian Music under Group C, may proceed to the B.A. Degree in Group (*vi*) Indian Music;

provided further that a candidate who wishes to proceed to the Degrees in Oriental Learning (B.O.L. Pass and Honours) shall be required to pass in Group D;

provided also that a candidate who has passed in Group D of the Intermediate Examination may proceed to the B.A. Degree in Groups (iii-a), (iv-a), (iv-b), (iv-c), (iv-d) and (v) or the B.A. (Honours) Degree in Branches II to XIII.

The scheme of examination in Military Science—Certificate 'A'—of the Madras University Officers' Training Corps shall be as laid down in the syllabus (*vide* **Appendix II**).

(ii) Two papers shall be set in each subject in Groups A, B and C, and each paper shall carry a maximum of 75 marks, except in the case of Physics, Chemistry, Natural Science, Geology, Geography, and Household Art, where the scheme of examination shall be as follows:—

Written Examination I Paper	50 Marks.
Do. II Paper	50 Marks.
Practical Examination—40 Marks and Note-books—10 Marks	50 Marks.

In Group D, there shall be seven papers. The first paper shall be on Composition or Translation of two hours

duration carrying 50 marks. For the remaining six papers, the maximum marks and the duration thereof shall be the same as for the Preliminary Part of the Oriental Title Examination. These seven papers shall together correspond to Parts II and III of the Intermediate Examination

In the case of Agriculture, Surveying, Drawing, Indian Music and Western Music, the second paper shall be the practical examination in the subject.

Each paper shall be of two hours' duration, except in the case of (1) languages, in which the two papers shall be of three hours' duration each, and as detailed under Part II, (2) Indian Music and Western Music, where the first paper shall be of three hours' duration, (3) Mathematics, Physics, Chemistry, Natural Science, Geology, Geography, Psychology, Logic, Indian History, Ancient History, Modern History and Islamic History in which the two papers shall be of two-and-a-half hours' duration each, and (4) Household Art in which the first paper shall be of three hours' duration and the second paper of 2½ hours' duration.

There shall, in addition, be a practical examination in Physics, Chemistry, Natural Science, Geology, Geography, and Household Art, and the scheme of examination in these subjects shall be as follows:—

Practical Examination ...	3 Hours ...	40 Marks.
Note-books ...	...	... 10 Marks.

Admission to Examination—conditions.

4. No candidate shall be admitted to the examination unless he has been registered as a Matriculate of this University, and has undergone the prescribed course in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

Candidates to apply for whole Examination—first appearance.

5. A candidate appearing for the examination on the first occasion shall apply for all the three Parts of the examination, and thereafter may appear for any part or parts of the examination in which he has not already secured passing marks at a previous examination.

6. A candidate shall be declared to have passed the examination if he obtains not less than—

(1) 35 per cent of the marks in Part I, English,

(2) 35 per cent of the marks in Part II, A Second Language, and

(3) (a) 35 per cent in each of the three subjects in Groups A, B and C, provided that,

Marks qualifying for a pass.

(i) in Physics, Chemistry, Natural Science, Geology, Geography and Household Art he secures not less than 35 per cent of the marks in the written papers taken together, and not less than 30 per cent of the marks in the practical examination (including note-books), and

(ii) in Indian Music and Western Music he secures not less than 35 per cent of the marks in the practical examination, and

(b) 35 per cent in each division of Group D selected under Part III.

A candidate offering Military Science—Certificate 'A'—of the Madras University Officers' Training Corps either as an optional subject or as an additional subject shall be required to sit for the examination conducted by the Army, and to secure a pass therein, according to the standard laid down by the Army from time to time :

Provided that until such time as provision is made for holding the examination for Certificate 'A' or 'B' twice yearly, it shall be open to a candidate who has gained pass marks in either Certificate 'A' or 'B' to claim credit as having already passed in the respective Certificate as a subject for the Intermediate Examination and to appear only in the remaining subjects for the Intermediate Examination at the next or any succeeding examination.

Candidates who fail to obtain a pass in Military Science —Certificate 'A'—and desire to complete the Intermediate Examination with another optional subject under Part III in place of Military Science—Certificate 'A'—shall be permitted to do so without further attendance in the new optional subject provided they pass the examination in accordance with the conditions prescribed in the Regulations.

All the other candidates shall be declared to have failed in the examination.

A candidate may pass the whole examination by passing in the several parts at the same or at different examinations.

Pass in parts. A candidate shall be declared to have passed in any part of the examination on his obtaining in that part the minimum marks prescribed above.

Note.—The divisions for the purpose of Group D shall be (1) Composition or Translation; and (2) the divisions prescribed in the Preliminary Part of the Oriental Title Examination.

Classification of successful candidates. 7. Candidates who pass in all the parts at the same examination, and who obtain not less than 50 per cent of the total marks shall be placed in the first class. All the other successful candidates shall be placed in the second class.

Marks required for distinction in subjects. Candidates who pass in all the parts at the same examination, and obtain not less than 60 per cent of the marks in any subject shall be declared to have gained distinction in that subject.

Classification of candidates successful in parts. Candidates who pass the whole examination by passing in the several parts at separate examinations shall be placed in a separate list.

Passed Intermediate—how to qualify in additional subjects. 8. A candidate who has passed the Intermediate Examination in Arts and Science shall be permitted to appear again for the examination in a new subject or subjects under Part III, provided he has undergone the course of study prescribed in the new subject or subjects selected and has attended a college for a further period of not less than one year. He shall be declared to have passed the examination if he obtains not less than 35 per cent of the marks in each new subject in Groups A, B and C, and 35 per cent in each division of Group D.

In the case of a successful candidate, a certificate to the effect that he has passed the Intermediate Examination in

Arts and Science with the specified additional subject or subjects shall be issued.

Transitory provision.

9. Notwithstanding anything contained in Regulation 4 *supra*, candidates who have undergone the prescribed course of study for the old F. A. Examination or the Intermediate Examination in Arts and Science under the Regulations or Bye-laws in force prior to 1927-28, and are qualified to sit for the examination, shall be permitted to appear for the Intermediate Examination in Arts and Science under the existing Regulations without producing fresh certificates of attendance. Such candidates shall appear for the three parts of the examination, provided that candidates who have passed the Intermediate Examination in Arts and Science under the Old Regulations in any part shall be deemed to have passed in the corresponding part or parts under the existing Regulations, *viz.*, Part I corresponding to Parts I and II, and Part II to Part III. Such candidates will be permitted to take any three of the subjects prescribed under Part III (optional subjects) and taken by candidates appearing through a Constituent or an Affiliated College under the existing Regulations.

Candidates desiring to appear under this Regulation shall obtain the previous permission of the Syndicate to sit for the examination by application made to the Registrar on or before the 1st November or 1st April preceding the March or September examination, as the case may be. Permission once granted shall be permanent.

Transitory Regulation.

10. Candidates who have failed in the Intermediate Examination in or prior to September 1947 in science subjects (under Part III) for which a practical test has since been prescribed will be permitted to take the examination without a practical test under the Old Regulations.

Note:—The examination under this Regulation will be according to the syllabuses, scheme of examination, etc., in force prior to March 1948.

This Regulation will be in force till September 1950.

CHAPTER XLIII.

Degree of Bachelor of Arts.

Admission to B.A. Examination—conditions.

1. Candidates for the B. A. Degree Examination shall be required to have passed the Intermediate Examination in Arts and Science of this University, and to have satisfied the requirements under (i) of (*c*) Part III of Regulation 3 of the Chapter *re* Intermediate Examination in Arts and Science, or an examination accepted by the Syndicate as equivalent thereto under conditions, if any, prescribed, and to have subsequently undergone a prescribed course of study in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

Course of Study.

2. The course of study shall comprise the following subjects, according to a syllabus to be prescribed from time to time :—

Part I—English.

The course shall comprise :—

(*a*) The study in detail of certain prescribed books. The works prescribed for detailed study shall consist of the following: —

(1) Shakespeare : (two plays).

(2) Modern Poetry : from Milton to the present day, about 2,000 lines.

(3) Modern Prose : from Addison to the present day, not more than three books.

(*b*) Composition on matter supplied by books prescribed for perusal. The works prescribed for perusal as a basis for composition shall consist of not more than three books which may be novels, essays or works of general value.

Note :—All papers in English—Part I—shall be regarded as a test of a candidate's command of correct English and in valuation greater emphasis shall be placed upon this.

aspect of the works than upon knowledge of the substance of the texts.

Any candidate, who is a member of the Madras University Officers' Training Corps, and has passed in Military Science—Certificate 'A'—shall have the option of taking Military Science—Certificate 'B'—in place of '(1) Shakespeare' and '(2) Modern Poetry', or as an additional subject under Part I (for syllabus and text-books *vide* **(Appendix III)**.

Candidates offering Military Science as an additional subject shall be deemed to have passed the examination in Part I if they pass in all the papers except those for which Military Science may be offered as an alternative, and in Military Science.

Note:—Candidates desirous of proceeding to a Professional or Honours Degree Course shall satisfy the requirements laid down for admission to these courses and may take Military Science—Certificate 'B'—as an additional subject.

Part II—A Second Language.

Course of Study *—(contd.)*

The course shall comprise the study of any one of the following Classical or Modern (Foreign or Indian) Languages, at the option of the candidate, according to a syllabus or text-books or both to be prescribed from time to time:—

(a) Classical		Sanskrit.	Arabic.
		Greek.	Persian.
		Latin.	Hebrew.
			Syriac.
(b) Modern	(1) Foreign	French.	German.
	(2) Indian	Tamil.	Oriya.
		Telugu.	Hindi.
		Kannada.	Bengali.
		Malayalam.	Burmese.
		Urdu.	Sinhalese.
		Marathi.	

Part III—Optional Subjects.

One of the following groups:—

(i-*a*) Mathematics.
(i-*b*) Mathematics.
(i-*c*) Statistics.

(ii) Any two of the following subjects, one of which shall be on the main standard, and the other on the subsidiary standard :—

Mathematics.	Geology.
Physics.	Physiology.
Chemistry.	Mechanical Engineering.
Botany.	Electrical Engineering.
Zoology.	Anthropology :

Course of Study —(*contd.*)

provided that Mechanical Engineering or Electrical Engineering shall be taken only as a Subsidiary subject by the candidates taking Physics as their Main subject :

provided that Anthropology shall be taken only as a Subsidiary subject by the candidates taking Botany, Zoology or Geology as their main subject.

(iii-*a*) Philosophy.
(iii-*b*) * * *
(iii-*c*) Psychology.
(iv-*a*) History and Economics.
(iv-*b*) Economics and History.
(iv-*c*) Politics and History.
(iv-*d*) Islamic History and Culture.
(v) Languages other than English.
(vi) Indian Music.
(vii) Western Music.
(viii) Geography.
(ix) Home Science :

provided, however, that only those who have taken Chemistry, either Physics or Biology, and one other subject under Part III of the Intermediate Examination of this University, or the corresponding subjects of an examination of some other University accepted by the Syndicate as equivalent thereto, shall be permitted to take *Home Science* under Part III of the course.

In each subject under Part III, a syllabus or text-books to indicate the scope of the subject shall be prescribed (for Syllabus *vide* **Appendix III**).

The course of study shall be as follows :—

Group (i-a)—Mathematics.

Course of Study —(contd).

The course shall comprise the study of (1) Algebra and Trigonometry, (2) Calculus, (3) Geometry (Pure and Analytical), (4) Dynamics, (5) Astronomy, (6) Hydrostatics, Properties of Matter and Heat.

Group (i-b)—Mathematics.

The course shall comprise the study of (1) Algebra and Trigonometry, (2) Calculus, (3) Geometry (Pure and Analytical), (4) Dynamics, and any two of the following subjects :—

(1) Astronomy.
(2) Elements of Statistics.
(3) Economics.
(4) Pure Geometry.
(5) Analysis.

Group (i-c)—Statistics.

The course shall comprise the study of (1) Geometry (Pure and Analytical), (2) Algebra and Trigonometry, (3) Calculus, (4) Statistical Methods (Measures of Central Tendency—Measures of Dispersion—Distribution of the Variable—Curve Fitting—Two Variables—Sampling), and (5) Elementary Theory of Probability and the Calculus of Finite Differences.

Group (ii)

Mathematics—Main.

The course shall comprise the study of (1) Algebra and Trigonometry,(2) Calculus, (3) Geometry (Pure and Analytical), and (4) Dynamics.

Mathematics—Subsidiary.

The course shall comprise the study of the following subjects : Algebra, Trigonometry, Analytical Geometry, and Calculus.

Physics—Main.

The course shall comprise the study of the following subjects :—

Course of Study —(contd.)

Dynamics, Properties of Matter and Hydrostatics, Heat and Light, Electricity, Magnetism and Sound.

Physics—Subsidiary.

The course shall comprise the study of the following subjects:—

Properties of Matter, Hydrostatics, Heat, Light, Electricity and Magnetism.

Chemistry—Main.

The course shall comprise the study of the following subjects :—

General, Theoretical and Physical Chemistry, Inorganic Chemistry and Organic Chemistry.

Chemistry—Subsidiary.

The course shall be of a less advanced character than that for candidates taking Chemistry of the main standard.

Botany, Zoology, Geology and Physiology—as a Main and a Subsidiary subject.

The course shall comprise the study of the subjects detailed in the syllabuses and the knowledge required of the candidates for the examination in the subsidiary subject shall be less detailed than that required for a pass in the main subject.

Mechanical or Electrical Engineering shall be taken only as a subsidiary subject to Physics. The course of study shall be as detailed in the syllabus.

Anthropology shall be taken only as a subsidiary subject to Botany, Zoology or Geology. The course of study shall be as detailed in the syllabus.

Note :—The courses of study and examinations in all the subjects on the subsidiary standard shall be common for B. A., B.Sc. and B.Sc. (Honours) Degree Examinations.

Group (iii-a)—Philosophy

Course of Study *—(contd.)*

The course shall comprise the study of the following subjects :—

1. General Psychology.
2. Ethics.
3. European Logic and Theory of Knowledge *or* Political Philosophy.
4. Indian Logic *or* an Indian Philosophical Classic (to be prescribed from time to time).
5. A European Philosophical Classic (to be prescribed from time to time).

The text-books for the various subjects shall be as given in **Appendix III**.

Group (iii-b)— * * *

Group (iii-c)—Psychology.

The course of study shall consist of the following subjects :—

1. General Psychology.
2. Introduction to Abnormal Psychology.
3. Child Psychology *or* Adolescent Psychology.
4. Elements of Social Psychology.
5. An Aspect of Psychology (to be prescribed from year to year.)

Group (iv-a)—History and Economics.

The course shall comprise the study of the following subjects :—

Course of Study *—(contd.)*

(1) General Indian History.

(2) Constitutional History of Great Britain and Ireland.

(3) Outlines of European History.

(4) Economics—General.

(5) Politics.

In each of the above subjects, a syllabus for the course of study or text-books to indicate the scope of the subject or both shall be prescribed.

Group (iv-b)—Economics and History.

The course shall comprise the study of the following subjects :—

Course of Study —(*contd.*)

(1) Economics—General [in common with Group (iv-a)].

(2) Economics—Special.

(3) Modern Economic History of England and India (from 1600 A. D.).

(4) General Indian History [in common with Group (iv-a)].

(5) Any one of the following three subjects :—

Constitutional History of Great Britain and Ireland.
Politics.
Outlines of European History.
} in common with Group (iv-a)

The paper, "Economics—Special" shall consist of two parts (*a*) Public Finance and (*b*) Rural Economics, both with special reference to India. Public Finance will include the economic functions of the State, the raising and spending of taxes and public loans and the regulation of tariffs. Rural Economics will include the organisation and financing of Agriculture, the Co-operative Movement and other allied problems.

Group (iv-c)—Politics and History.

The course shall comprise the study of the following subjects:—

Course of Study —(*contd.*)

(1) General Indian History.
(2) Outlines of European History.
(3) Economics—General.
} in common with Group (iv-a)

(4) Political Theory (including the study of a classic to be prescribed from time to time).

(5) Political Organisation.

In each of the above subjects, a syllabus for the course of study or text-books to indicate the scope of the subject or both shall be prescribed.

Group (iv-d)—Islamic History and Culture.

The course shall comprise the study of the following subjects :—

Course of Study —(contd.)

(1) General History of Islam.
(2) Civilization and Culture of Islam.
(3) History of India with reference to the role of Islam.
(4) Politics. } in common with Group (iv-a)
(5) Economics—General. } in common with Group (iv-a)

The syllabuses for the subjects and text-books, if any, shall be as prescribed in **Appendix III.**

Group (v)—Languages other than English.

Course of Study —(contd.)

Candidates shall select any one of the following languages, which shall be taken in conjunction with the cognate subject or related language specified against each language.

Selected Language.	*Cognate Subject or Related Language.*
Sanskrit ...	Early Indian History.
Arabic or Persian ...	Early Muslim History.
Urdu ...	Indian History—Muslim Period *or* Arabic *or* Persian.
Tamil, Telugu, Kannada or Malayalam ...	Early South Indian History *or* Sanskrit.
Marathi ...	History of the Marathas *or* Sanskrit.
Hindi ...	Sanskrit *or* Urdu *or* Indian History—Muslim Period.
Oriya ...	Early History of Orissa *or* Sanskrit.
Greek or Latin ...	A Special Period of Greek *or* Roman History respectively.
French or German ...	A Special Period of Modern European History.
Hebrew ...	History of the Jews.
Syriac ...	History of the Syrians.

The course of study in the several languages and the related subjects shall be in accordance with a syllabus or text-books to be prescribed from time to time.

Group (vi)—Indian Music.

The course of study shall be in accordance with the syllabus as given in **Appendix III.**

Group (vii)—Western Music.

The course of study shall be in accordance with the syllabus as given in **Appendix III.**

Group (viii)—Geography.

The course shall comprise the study of the following subjects :—

(i) Regional Geography of India (in detail).

(ii) General Regional Geography of the World.

(iii) Physical Basis of Geography.

(iv) Practical Geography.

Course of Study —*(contd.)*

(v) & (vi) Any *two* of the following subjects:—

(a) Economic Geography.

(b) Historical and Political Geography.

(c) Anthropo-Geography.

(d) Plant and Animal Geography (Bio-Geography).

The syllabuses for the above subjects shall be prescribed from time to time.

Group (ix)—Home Science.

The course shall comprise the study of the following subjects :—

(1) Household Economics.

Course of Study —*(contd.)*

(2) Bacteriology and Hygiene.

(3) Physiology and Nutrition.

(4) Applied Physical Science.

The syllabuses for the subjects and text-books, if any, shall be as prescribed in **Appendix III.**

Scheme of Examination—Part I.

3. The scheme of examination shall be as follows :—

Part I—English.

There shall be four papers each of three hours' duration, carrying a maximum of 100 marks each.

			Hours.	*Marks.*
1.	Shakespeare	...	3	100
2.	Modern Poetry	...	3	100
3.	Modern Prose	...	3	100
4.	Composition	...	3	100

The scheme of examination in Military Science—Certificate 'B'—of the Madras University Officers' Training Corps shall be as laid down in the syllabus (*vide* **Appendix III**).

Part II—A Second Language.

Scheme of Examination—Part II.

In the selected language, there shall be two papers each of three hours' duration, carrying a maximum of 100 marks each.

		Hours.	*Marks.*
Paper I	...	3	100
Paper II	...	3	100

Each paper shall comprise questions as detailed below:—

CLASSICAL LANGUAGES.

Sanskrit.—The first paper shall relate to the prescribed text-books and grammar taught with reference to them. The second paper shall consist of three parts, the first part consisting of Sanskrit passages partly from the text-books and partly from passages not contained in the text-books for translation into English, the second part consisting of a passage or passages in English for translation into Sanskrit and the third part relating to the History of Sanskrit Literature omitting the History of the Vedic Period and of technical literature (such as Medicine, Astronomy, Astrology, Mathematics and Systems of Philosophy).

Greek and Latin.—The first paper shall consist of passages for translation from the text-books, questions on idiom and grammar, and questions on the subject-matter

of the text-books. The second paper shall consist of a piece of English Prose for translation into Greek and Latin and passages not contained in the text-books for translation into English.

Hebrew, Syriac, Arabic and Persian.—The first paper shall consist of questions on (1) Text-books, (2) Grammar, and (3) Rhetoric and Prosody of an elementary nature, and the second paper shall consist of questions on translation from the selected language into English and *vice versa* and on the History of Literature.

FOREIGN LANGUAGES.

French and German.—The first paper shall consist of passages for translation from the text-books, questions on idiom and grammar, and questions on the subject-matter of the text-books. The second paper shall consist of a subject for composition chosen from the prescribed books, and unseen passages shall be set for translation from French or German into English and *vice versa*.

INDIAN LANGUAGES.

The first paper shall comprise questions :

Urdu.—On (1) Prescribed text-books, (2) Grammar, (3) Rhetoric and Prosody of an elementary nature, and (4) on the History of Literature.

All other Languages.—On prescribed text-books in Poetry and Prose, Grammar and History of Language and Literature.

The second paper in all languages shall comprise :

(1) a passage or passages in English for translation into the selected language ;

(2) a subject for essay having reference to modern thought ; and

(3) a subject for essay based on books prescribed for non-detailed study.

Note.—One hour shall ordinarily be assigned for translation question and one hour for each part of composition.

Part III—Optional Subjects.

Scheme of Examination—Part III-Gr. (i-a) Mathematics.

Group (*i-a*) *Mathematics.*—The examination shall consist of six papers (1) Algebra and Trigonometry, (2) Geometry (Pure and Analytical), (3) Dynamics, (4) Calculus, (5) Astronomy and (6) Hydrostatics, Properties of Matter and Heat, as follows :—

		Hours.	*Marks.*
1.	Geometry ...	3	90
2.	Algebra and Trigonometry ...	3	90
3.	Dynamics ...	2	70
4.	Calculus ...	2	70
5.	Astronomy ...	2	80
6.	Hydrostatics, Properties of Matter and Heat ...	3	100
		Total ...	500

Scheme of Examination—Gr. (i-b)—Mathematics.

Group (*i-b*) *Mathematics.*—The examination shall consist of four papers in the compulsory subjects*—Geometry (Pure and Analytical), Algebra and Trigonometry, Dynamics, and Calculus—and one paper in each of the two optional subjects selected,† as follows :—

		Hours.	*Marks.*
1.	Geometry ...	3	90
2.	Algebra and Trigonometry ...	3	90
3.	Dynamics ...	2	70
4.	Calculus ...	2	70
5.	Optional subject I† ...	3	90
6.	Optional subject II† ...	3	90
		Total ...	500

**Note.*—The question papers in the above four subjects shall be common for the candidates in Groups (i-a), (i-b) and (ii).

† Two out of the following :—Astronomy, Pure Geometry, Elements of Statistics, Analysis and Economics.

Group (i-c)—Statistics.

Scheme of Examination—Gr. (i-c)—Statistics.

The examination shall consist of five papers in theory and one practical examination.

			Hours.	Marks.
1.	‡ Geometry	...	3	80
2.	‡ Algebra and Trigonometry	...	3	80
3.	‡ Calculus	...	2	70
4.	Statistics I	...	3	90
5.	Statistics II	...	3	90
6.	Practical Examination	...	3	70
	Note-books	...		20
			Total ...	500

At the practical examination candidates must submit to the Examiner their laboratory note-books (duly certified by their Lecturers as *bona fide* records of work done by the candidates).

Group (ii) Mathematics—Main.

Scheme of Examination—Gr. (ii)—Mathematics.

The examination shall consist of four papers*—Geometry (Pure and Analytical), Algebra and Trigonometry, Dynamics and Calculus, as under Group (*i-b*) above.

			Hours.	Marks.
1.	Geometry	...	3	100
2.	Algebra and Trigonometry	...	3	100
3.	Dynamics	...	2	75
4.	Calculus	...	2	75
			Total ...	350

* *Note.*—The question papers in the above four subjects shall be common for the candidates in Groups *(i-a,) (i-b)* and *(ii)*.

‡ Papers common to all candidates in Groups *(i-a)*, *(i-b)*, *(i-c)* and *(ii)*.

Mathematics—Subsidiary.

The examination shall consist of two papers of three hours' duration each as follows:—

		Hours.	Marks.
Paper I (Algebra and Calculus)	...	3	75
Paper II (Trigonometry and Analytical Geometry)	...	3	75
	Total	...	150

The problems set for the subsidiary papers will in general be of a lower standarad than for the main papers in the same subjects and will, as far as possible, relate to scientific topics.

Physics—Main.

Scheme of Examination— Gr. (ii)— Physics.

The examination in theory shall consist of four papers of three hours' duration each. There shall be a practical examination in which two exercises shall be set. The scheme of examination shall be as follows :—

			Hours.	Marks.
1.	Dynamics and Hydrostatics	...	3	60
2.	Properties of Matter and Heat	...	3	60
3.	Light and Sound	...	3	60
4.	Electricity and Magnetism	...	3	60
	Practical examination	...	6	90
	Laboratory note-books	...		20
		Total	...	350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates.

Physics—Subsidiary.

The examination shall consist of two papers of two hours' duration each and a practical examination of three hours' duration.

		Hours.	*Marks.*
1.	Hydrostatics, Properties of Matter and Heat ...	2	50
2.	Light, Electricity and Magnetism	2	50
	Practical Examination ...	3	50
	Total ...		150

Chemistry—Main.

Scheme of Examination—Gr. (ii)—Chemistry.

There shall be a written examination of three papers of three hours' duration each and a practical examination of two papers of six hours' and three hours' duration respectively.

		Hours.	*Marks.*
1.	General, Theoretical and Physical Chemistry ...	3	80
2.	Inorganic Chemistry ...	3	80
3.	Organic Chemistry ...	3	80
	Practical Examination I (Inorganic Chemistry) ...	6	80
	Practical Examination II (Organic Chemistry) ...	3	30
	Total ...		350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates. No special marks shall be assigned to the note-books, but the Examiners shall take into consideration the laboratory work when judging the practical examination results.

Candidates who fail to submit properly certified note-books of their practical work will be debarred from the practical examinations.

Chemistry—Subsidiary.

The examination shall be of a less advanced character than that for candidates taking Chemistry of the main standard. There shall be a written examination of two papers and a practical examination.

	Hours.	Marks.
General and Inorganic Chemistry ...	3	60
Organic Chemistry ...	2	40
Practical Examination ...	3	50
Total ...		150

The practical examination shall be held to test the candidate's ability to make experiments illustrating the subjects included in the course, identifying the more common metals and their compounds (containing not more than one acid and one base) and making simple volumetric analysis with standard solution of acids, alkalis, potassium permanganate, and of iodine and sodium thiosulphate.

Botany, Zoology, Geology and Physiology—as a Main and a Subsidiary subject.

The examination shall consist of—

1. In the Main subject—Two papers of three hours' duration each and two Practical Examinations of three hours' duration each.

2. In the Subsidiary subject—Two papers of two hours' duration each and one Practical Examination of three hours' duration.

Scheme of Examination—Gr. (ii)—Botany.

The scheme of examination shall be as follows:—

Botany—Main.

	Hours.	Marks.
Written Examination Paper I—Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Histology ...	3	80

Botany—Main (contd.)	*Hours.*	*Marks.*
Written Examination Paper II—Morphology and Taxonomy of Angiosperms, Plant Physiology and General Principles ...	3	80
Practical Examination I ...	3	75
Practical Examination II ...	3	75
Laboratory note-books ...		20
Collections ...		20
Total ...		350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates.

Botany—Subsidiary.

	Hours.	*Marks.*
Written Examination Paper I—Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Histology ...	2	50
Written Examination Paper II—Morphology and Taxonomy of Angiosperms, Plant Physiology and General Principles ...	2	50
Practical Examination ...	3	50
Total ...		150

Scheme of Examination—Gr. (ii)—Zoology.

Zoology—Main.

	Hours.	*Marks.*
Written Examination Paper I—Invertebrata	3	100
Written Examination Paper II—Chordata	3	100
Practical Examination I ...	3	60
Practical Examination II ...	3	60
Laboratory note-books ...		30
Total ...		350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates.

Zoology—Subsidiary.

	Hours.	Marks.
Written Examination Paper I—Invertebrata	2	50
Written Examination Paper II—Chordata	2	50
Practical Examination ...	3	50
Total ...		150

Scheme of Examination—Gr. (ii)—Geology.

Geology—Main.

	Hours.	Marks.
Written Examination Paper I—All divisions other than Mineralogy and Petrology ...	3	80
Written Examination Paper II—Mineralogy and Petrology ...	3	80
Practical Examination I ...	3	75
Practical Examination II ...	3	75
Laboratory note-books ...		20
Collections		20
Total ...		350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates.

Geology—Subsidiary.

	Hours.	Marks.
Written Examination Paper I—All divisions other than Mineralogy and Petrology ...	2	50
Written Examination Paper II—Mineralogy and Petrology ...	2	50
Practical Examination ...	3	50
Total ...		150

Scheme of Examination—Gr. (ii)—Physiology.

Physiology—Main.

	Hours.	Marks.
Written Examination Paper I...	3	80
Written Examination Paper II...	3	80
Practical Examination I ...	3	75
Practical Examination II ...	3	75
Laboratory note-books ...		40
Total ...		350

At the Practical Examination candidates must submit to the Examiner or Examiners their laboratory note-books, duly certified by their Professors or Lecturers as *bona fide* records of work done by the candidates.

Physiology—Subsidiary.

	Hours.	Marks.
Written Examination Paper I...	2	50
Written Examination Paper II...	2	50
Practical Examination ...	3	50
Total ...		150

Mechanical Engineering or Electrical Engineering (to be taken as a Subsidiary subject to Physics).

Mechanical Engineering—Subsidiary.

Scheme of Examination—Gr. (ii)—Mechanical Engineering.

The examination shall be both written and practical and the scheme of examination shall be as follows :—

	Hours.	Marks.
Written Examination Paper I—Machine Design	2	50
Written Examination Paper II—Heat Engines, Steam Engines, Fuels and Boilers, and Internal Combustion Engines ...	2	50
Practical Examination ...	3	50
Total ...		150

Electrical Engineering—Subsidiary.

Scheme of Examination— Gr. (ii)— Electrical Engineering.

The examination shall be both written and practical and the scheme of examination shall be as follows —

	Hours.	Marks.
Written Examination Paper I—Direct Current (*excluding Storage Batteries and Illumination*)	2	50
Written Examination Paper II—Alternating Current and Storage Batteries and Illumination	2	50
Practical Examination	3	50
Total ...		150

Anthropology—Subsidiary.

The examination shall be both Written and Practical, and shall consist of the following papers :—

Scheme of Examination— Gr. (ii)— Anthropology.

	Hours.	Marks.
Written Examination Paper I (Physical Anthropology and Prehistory) ...	2	50
Written Examination Paper II (Social Anthropology and Material Culture) ...	2	50
Practical Examination ...	3	50
Total ...		150

Group (iii-a)—Philosophy.

Scheme of Examination—Gr. (iii-a)—Philosophy.

The examination shall consist of five papers as follows :—

	Hours.	*Marks.*
1. General Psychology	3	100
2. Ethics	3	100
3. European Logic and Theory of Knowledge *or* Political Philosophy	3	100
4. Indian Logic *or* An Indian Philosophical Classic ...	3	100
5. A European Philosophical Classic	3	100
Total ...		500

Group (iii-b) * * *

Group (iii-c)—Psychology.

Scheme of Examination—Gr. (iii-c)—Psychology.

The examination shall consist of five papers as follows :—

	Hours.	*Marks.*
1. General Psychology	3	100
2. Introduction to Abnormal Psychology ...	3	100
3. Child Psychology *or* Adolescent Psychology ...	3	100
4. Elements of Social Psychology ...	3	100
5. An Aspect of Psychology (to be prescribed from year to year)	3	100
Total ...		500

Group (iv-a)—History and Economics.

Scheme of Examination—Gr. (iv-a)—History and Economics.

There shall be five papers of three hours' duration each.

	Hours.	Marks.
1. Politics	3	100
2. General Indian History ...	3	100
3. Constitutional History of Great Britain and Ireland ...	3	100
4. Outlines of European History	3	100
5. Economics—General ...	3	100
Total ...		500

Group (iv-b)—Economics and History.

Scheme of Examination—Gr. (iv-b)—Economics and History.

There shall be five papers of three hours' duration each as follows :—

	Hours.	Marks.
1. Economics—General ...	3	100
2. Economics—Special ...	3	100
3. Modern Economic History of England and India (from 1600 A.D.)	3	100
4. General Indian History ...	3	100
5. Any one of the following :—		
Constitutional History of Great Britain and Ireland	3	100
Politics	3	100
Outlines of European History	3	100
Total (of 5 papers) ...		500

Group (iv-c)—Politics and History.

Scheme of Examination—Gr. (iv-c)—Politics and History.

There shall be five papers of three hours' duration each as follows :—

	Hours.	Marks.
1. General Indian History ...	3	100
2. Outlines of European History ...	3	100
3. Economics—General ...	3	100
4. Political Theory ...	3	100
5. Political Organization ...	3	100
	Total ...	500

Group (iv-d)—Islamic History and Culture.

Scheme of Examination—Gr. (iv-d)—Islamic History and Culture.

There shall be five papers of three hours' duration each as follows :—

	Hours.	Marks.
1. General History of Islam ...	3	100
2. Civilization and Culture of Islam ...	3	100
3. History of India with reference to the role of Islam ...	3	100
4. Politics ...	3	100
5. Economics—General ...	3	100
	Total ...	500

Group (v)—Languages other than English.

Scheme of Examination—Gr. (v)—Languages.

The examination shall consist of six papers of three hours' duration each.

Scheme of Examination—Gr. (v)—Languages —(*contd.*)

The scheme of examination for the several languages shall be as follows :—

Sanskrit and Early Indian History.

		Hours.	Marks.
1.	Books of the Early Period ...	3	80
2.	Books of the Later Period I ...	3	80
3.	Books of the Later Period II ...	3	80
4.	Grammar—Historical and Comparative ...	3	80
5.	History of Sanskrit Literature ...	3	80
6.	Cognate Subject—Early Indian History ...	3	100
	Total ...		500

(i) Urdu and Indian History (Muslim Period) or Arabic or Persian and (ii) Arabic or Persian and Early Muslim History.

		Hours.	Marks.
1.	Prose Books ...	3	80
2.	Poetry Books ...	3	80
3.	Translation ...	3	80
4.	Grammar including Rhetoric and Prosody ...	3	80
5.	History of Language and Literature ...	3	80
6.	Cognate Subject/Related Language for (*i*)—Indian History—Muslim Period or Arabic or Persian ... Cognate Subject for (*ii*)—Early Muslim History ...	3	100
	Total ...		500

Tamil, or Telugu, or Kannada, or Malayalam, or Oriya, or Marathi and a Cognate Subject or Sanskrit

Scheme of Examination— Gr. (v)— Languages —*(contd.)*

	Hours.	Marks.
1. Set Books and History of Literature I ...	3	80
2. Set Books and History of Literature II ...	3	80
3. History of Language and Grammar ...	3	80
4. Comparative Grammar—Dravidian or Gaurian ...	3	80
5. Composition ...	3	80
6. Cognate Subject— Early South Indian History Early History of Orissa History of the Marathas *or* Related Language—Sanskrit ...	3	100
Total ...		500

Hindi and Sanskrit or Urdu or Indian History—Muslim Period.

Scheme of Examination— Gr. (v)— Languages —*(contd.)*

	Hours.	Marks.
1. Set Books in Poetry (Ancient and Modern) ...	3	80
2. Set Books in Prose and Drama.	3	80
3. History of Language and Literature ...	3	80
4. Grammar (Historical and Comparative) Rhetoric and Prosody ...	3	80
5. Translation from English into Hindi and Composition ...	3	80
6. Cognate Subject—Indian History—Muslim Period *or* Related Language—Sanskrit or Urdu ...	3	100
Total ...		500

Greek or Latin and Greek or Roman History.

Scheme of Examination—Gr. (v)—Languages—*(contd.)*

	Hours.	Marks.
1. Set Books and History of Literature I	3	80
2. Set Books and History of Literature II ...	3	80
3. Prose Composition ...	3	80
4. Translation (from unprepared passages) ...	3	80
5. Grammar ...	3	80
6. Cognate Subject—Greek (Special Period) or Roman History ...	3	100
Total ...		500

French or German and Modern European History.

Scheme of Examination—Gr. (v)—Languages—*(contd.)*

	Hours.	Marks.
1. Set Books and History of Literature I	3	80
2. Set Books and History of Literature II	3	80
3. History of Language ...	3	80
3. Composition	3	80
5. Translation	3	80
6. Cognate Subject—Modern European History ...	3	100
Total ...		500

Hebrew and History of the Jews.

Scheme of Examination—Gr. (v)—Languages —*(contd.)*

		Hours.	Marks.
1.	Set Books I ...	3	80
2.	Set Books II ...	3	80
3.	Translation ...	3	80
4.	Grammar	3	80
5.	History of Language and Literature	3	80
6.	Cognate Subject—History of the Jews	3	100
	Total ...		500

Syriac and History of the Syrians.

Scheme of Examination—Gr. (v)—Languages —*(contd.)*

		Hours.	Marks.
1.	Set Books I ...	3	80
2.	Set Books II ...	3	80
3.	Translation ...	3	80
4.	Grammar	3	80
5.	History of Language and Literature	3	80
6.	Cognate Subject—History of the Syrians	3	100
	Total ...		500

Group (vi)—Indian Music.

Scheme of Examination—Gr. (vi)—Indian Music.

The scheme of examination shall be as follows:—

	Hours.	Marks.
Theory Paper I ...	3	150
Theory Paper II ...	3	150
Practical Examination I ...	3	100
Practical Examination II ...	3	100
Total ...		500

Group (vii)—Western Music.

Scheme of Examination—Gr. (vii)—Western Music.

The scheme of examination shall be as follows :—

		Hours.	Marks.
Theory Paper I	...	3	150
Theory Paper II	...	3	150
Practical Examination I	...	3	100
Practical Examination II	...	3	100
	Total ...		500

Group (viii)—Geography.

Scheme of Examination—Gr. (viii)—Geography.

The examination shall be both written and practical and the scheme of examination shall be as follows :—

		Hours.	Marks.
1. Regional Geography of India		3	80
2. General Regional Geography of the World	...	3	80
3. Physical Basis of Geography		3	80
4. and 5. Two out of the following:			
Economic Geography	...	3	80
Historical and Political Geography	...	3	80
Anthropo-Geography	...	3	80
Bio-Geography	...	3	80
6. Practical Geography	...	3	80
Practical Geography Note-books			0
Total (of 5 papers, Practical Geography and Note-books)	...		00

Group (ix)—Home Science.

The examination shall be both written and practical in all subjects except Household Economics, where it shall be only written, and the scheme of examination shall be as follows :—

Scheme of Examination—Gr. (ix)—Home Science.

		Hours.	*Marks.*
(1) Household Economics	...	3	100
(2) Bacteriology and Hygiene	...	3	80
(3) Physiology and Nutrition	...	3	80
(4) Applied Physical Science	...	3	80
Practical Examination—			
Bacteriology and Hygiene	...	3	50
Physiology and Nutrition	...	3	50
Applied Physical Science	...	3	60
		Total ...	500

Divisions in the subjects for Examinations.

4. The divisions of the examinations in the groups under Part III shall be as follows :—

Group (i-a)—Mathematics—(1) Pure Mathematics, (2) Applied Mathematics.

" *(i-b)—Mathematics*—(1) Compulsory subjects, (2) Optional subjects.

" *(i-c)—Statistics*—(1) Pure Mathematics (Geometry, Algebra and Trigonometry, and Calculus), (2) Statistics (Statistics I and Statistics II), (3) Practical.

" *(ii)—Mathematics*—(1) Main subject, (2) Subsidiary subject,

and

" *(ii)—Other subjects*—(1) The written examination in the main subject, (2) the practical examination in the main subject, (3) the examination in the subsidiary subject.

Group *(iii-a)*—*Philosophy*—(1) General Psychology and Ethics, (2) European Logic and Theory of Knowledge *or* Political Philosophy, Indian Logic *or* Indian Philosophical Classic, and European Philosophical classic.

,, *(iii-b)*— * * *

,, *(iii-c)*—*Psychology*—(1) General Psychology, Elements of Psychology, and An Aspect of Psychology, (2) Introduction to Abnormal Psychology, and Child Psychology *or* Adolescent Psychology.

,, *(iv-a)*—*History and Economics*—(1) General Indian History and Outlines of European History and Economics, (2) Constitutional History, and Politics.

,, *(iv-b)*—*Economics and History*—(1) Economics, [the three papers—Economics General, Economics (Special), and Economic History], (2) the two other subjects.

,, *(iv-c)*—*Politics and History*—(1) General Indian History, Outlines of European History, and Economics, (2) Political Theory and Political Organization.

,, *(iv-d)*—*Islamic History and Culture*—(1) General History of Islam, Civilization and Culture of Islam, and History of Islam in India, (2) Politics and Economics.

,, *(v)*—*Languages other than English*—(1) Selected Language, (2) Cognate Subject or Related Language.

,, *(vi)*—*Indian Music*—(1) Theory, (2) Practical Examination.

,, *(vii)*—*Western Music*—(1) Theory, (2) Practical Examination.

,, *(viii)*—*Geography*—(1) Regional Geography of India, General Regional Geography of the World, and Optional Subjects, (2) Physical Basis of Geography and Practical Geography.

Group (ix)—Home Science—(1) Household Economics, (2) Written Examination in the other subjects (Bacteriology and Hygiene, Physiology and Nutrition, and Applied Physical Science), and (3) Practical Examination in Bacteriology and Hygiene, Physiology and Nutrition, and Applied Physical Science.

Conditions of eligibility of a candidate for the Degree.

5. No candidate shall be eligible for the Degree of Bachelor of Arts until he has completed the course of study prescribed and passed the examination in the subjects contained in the course of study as detailed in Regulations 2 and 3 *supra*.

Marks required for a pass in the several parts to qualify for the Degree.

6. A candidate shall not be eligible for the Degree of Bachelor of Arts unless he has passed the examination in English (Part I), the examination in the selected second language under Part II, and the examination in the selected optional group under Part III. A candidate who obtains not less than 35 per cent of the marks in Part I shall be declared to have passed the examination in Part I, a candidate who obtains not less than 35 per cent of the marks in the selected language in Part II shall be declared to have passed the examination in Part II, and a candidate who obtains not less than 35 per cent of the total marks in the selected optional group in Part III and not less than 30 per cent of the marks in each division of the examination in this Part, except in the case of Groups (vi) and (vii)—Indian Music and Western Music—shall be declared to have passed the examination in Part III.

In the case of Groups (vi) and (vii)—Indian Music and Western Music—a candidate who obtains not less than 35 per cent of the total marks and not less than 35 per cent in the practical examination and not less than 30 per cent in the theory examination shall be declared to have passed the examination in Part III.

A candidate offering Military Science—Certificate 'B' —of the Madras University Officers' Training Corps either in place of 'Shakespeare' and 'Modern Poetry' or as an

additional subject shall be required to sit for the examination conducted by the Army, and to secure a pass therein according to the standard laid down by the Army from time to time :

Provided that until such time as provision is made for holding the examination for Certificate 'A' or 'B' twice yearly, it shall be open to a candidate who has gained pass marks in Certificate 'B' to claim credit as having already passed in the Certificate as a portion of Part I of the B.A. Degree Examination and to appear only in the remaining papers for the B.A. Degree Examination at the next or any succeeding examination.

Candidates who fail to obtain a pass in Military Science —Certificate 'B'—and desire to complete the B.A. Degree Examination in English shall be permitted to do so without further attendance in "Shakespeare" and "Modern Poetry", provided they pass the examination in accordance with the conditions laid down in the Regulations.

Classification of successful candidates.

7. Successful candidates who obtain not less than 60 per cent of the marks in any Part mentioned in Regulation 3 shall be placed in the first class in that Part. Successful candidates who obtain less than 60 per cent and not less than 50 per cent of the marks in any Part shall be placed in the second class in that Part. All the other successful candidates obtaining less than 50 per cent of the marks in any Part shall be placed in the third class in that Part.

Candidates may appear for the Examination in parts—payment of fees.

8. A candidate for the B.A. Degree Examination may, at his option, present himself for the whole or for any Part or Parts of the examination at any one time. He should, however, pay the fee for the whole examination at his first appearance.

A B.A. may qualify in an additional language in Part II.

9. A person who has qualified for the B.A. Degree of this University shall be permitted to present an additional language as a second language under Part II of the B. A. Degree Examination, provided that the Syndicate is satisfied that he has undergone the course of study prescribed in the language selected

by attending a college for a period of not less than one academic year of 3 terms after qualifying for the degree.

A candidate coming under the provisions of this Regulation shall be declared to have passed the examination if he obtains not less than 35 per cent of the marks.

A B. A. may qualify in additional subjects in Part III.

10. A person who has qualified for the B. A. Degree of this University shall be permitted to appear for a different optional group under Part III of the B.A. Degree Examination, provided that the Syndicate is satisfied that he has undergone the course of study (both theoretical and practical) prescribed for the selected new group of optional subjects by attending a college for a period of not less than one academic year of 3 terms after qualifying for the degree.

In the case of Science subjects, the main subject offered for the subsequent examination shall be one different from the main subject in which he previously qualified for the degree. He shall be exempted from examination in the subsidiary subject, provided it was offered as his main or subsidiary subject on the occasion when he qualified for the degree.

A candidate coming under the provisions of this Regulation shall be declared to have passed the examination if he obtains not less than 35 per cent of the marks in the aggregate, and not less than 30 per cent in each division of the optional group in Part III.

The divisions for the different groups shall be the same as those prescribed in Regulation 4 *supra*, except in the case of the group for Science subjects where the candidate is exempted from the examination in the subsidiary subject. Where he is exempted from examination in the subsidiary subject, his aggregate marks shall comprise the marks in the main subject only:

Provided, however, a candidate who has already qualified for the B.A. Degree of this University in Group (i-a), (i-b) or (ii-a) and desires to qualify further in Group (i-c)—Statistics—shall be exempted from examination in the following subjects which are common to these Groups :—Geometry; Algebra and Trigonometry; and Calculus.

B. Sc. to proceed for B.A.

11. A candidate who has qualified for the B. Sc. Degree shall be permitted to appear for the B. A. Degree Examination after one year's course in Parts I and II in a Constituent or an Affiliated College. Candidates coming under this Regulation shall be exempted from examination in Part III—Optional Group.

Classification of successful candidates under Regulations 9, 10 and 11.

12. Successful candidates under Regulations, 9, 10 and 11 shall be placed in a separate list. They shall not be eligible for prizes or medals awarded by the University.

Such candidates shall not be admitted at a Convocation a second time, but a special Certificate setting forth the further subjects of the examination passed by them and the dates of such examination shall be given to them.

Transitory provision.

13. Candidates who have undergone the prescribed course of study for the Degree of Bachelor of Arts either under the Old Bye-laws or the Old Regulations in force prior to 1929-30, and are qualified to sit for the examination, shall be permitted to appear for the B. A. Degree Examination under the existing Regulations without producing additional certificates of attendance in Parts or Groups corresponding to the Divisions or Groups of the Old Bye-laws or Old Regulations respectively. Such candidates shall appear for the three Parts of the examination, provided that candidates who have passed in any Division or Divisions or a Part of the B. A. Degree Examination under either the Old Bye-laws or Old Regulations, as the case may be, shall be deemed to have passed in the corresponding Part or Parts under the existing Regulations, *viz.*,

Division I or Part I (English Language) corresponding to Part I.

Division II (Second Language) corresponding to Part II, and

Division III or Part II (Optional Group) corresponding to Part III.

Candidates may also be permitted to take any of the optional groups prescribed under Part III, and offered by

college candidates, under the existing Regulations, subject to the proviso that the optional subject proposed to be taken does not require any practical course of laboratory training.

Candidates desiring to appear under this Regulation shall obtain the previous permission of the Syndicate to sit for the examination by application made to the Registrar on or before the 1st November or 1st April preceding the March or September examination, as the case may be. Permission once granted shall be permanent.

Transitory Regulation.

14. The examination in Group (iii-b)—Philosophy—under Part III of the B.A. Degree Examination under the Regulations in force prior to the academic year 1947-48 shall be held till the end of the academic year 1949-50 (*i. e.* till the B. A. Degree Examination of March 1950) for the benefit of those candidates who have already appeared for the examination in that group and failed therein.

CHAPTER XLIV.

Degree of Bachelor of Arts (Honours).

1. Candidates for the Examination of Bachelor of Arts (Honours) Degree shall be required :

either

A

Conditions of admission to B.A. (Hons.) Degree Examination.

(1) to have passed the Intermediate Examination in Arts and Science of this University and to have satisfied the requirements under (i) of (c) Part III of Regulation 3 of Chapter XLII *re* Intermediate Examination in Arts and Science, or an examination accepted by the Syndicate as equivalent thereto, under conditions, if any, prescribed; and

(2) to have undergone subsequently a further course of study in a Constituent or an Affiliated College for a period of not less than three academic years or nine terms ;

or

B

(1) to have qualified for the Degree of Bachelor of Arts or Science in this University or to have passed a Degree examination of some other University in India accepted by the Syndicate as equivalent thereto, under conditions, if any, prescribed ; and

(2) to have undergone subsequently a further course of study in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

2. The course shall comprise the study of—

Part I—Preliminary Examination.—English to be studied during the first year of the course.

Course of Study.

Part II—Final Examination.—One of the following branches of knowledge to be studied during the course prescribed :—

I-A. Mathematics.
I-B. Statistics.
II-A. Philosophy.
II-B. Psychology.

III. History.
IV. Economics.
V. Politics.
VI. * * *
VII. English Language and Literature.
VIII. Sanskrit Language and Literature.
IX. Arabic Language and Literature.
X. Syriac Language and Literature.
XI. A Dravidian Language or Urdu and its Literature.
(Tamil, Telugu, Kannada, Malayalam or Urdu).
XII. Hindi Language and Literature.
XIII. Islamic History and Culture.

PART I.

English.

Course of Study—English.

The course shall include—(*a*) in the case of candidates other than those who have selected Branch VII—English Language and Literature—

(1) The study in detail of certain prescribed books (Prose); and

(2) the study of certain books prescribed for perusal;

(*b*) in the case of candidates who select Branch VII—English Language and Literature—

(1) The study of the History of England treated in relation to the History of English Language and Literature, and

(2) the study of certain books prescribed for perusal [as in (*a*) (2) above].

The books prescribed for perusal may include works of Fiction, Literary Criticism, Biography, History, Science or Philosophy.

PART II.

[*Note*—Syllabuses for the subjects or text-books prescribed, if any, will be found in **Appendix IV.]**

I-A. Mathematics.

Course of Study—Mathematics. The course shall comprise the study of—

(*a*) Pure Mathematics :—

1. Pure Geometry including Projective Geometry.
2. Algebra and Theory of Equations.
3. Plane Trigonometry.
4. Differential and Integral Calculus including Reimann Integration, Cauchy's Theorem on Contour Integration and Fourier's Series.
5. Elementary Differential Equations.
6. Co-ordinate Geometry of Two Dimensions.
7. Solid Geometry—the Line, Plane, Sphere and Surfaces of the Second Degree.

(*b*) Applied Mathematics :—

1. Statics excluding the Theory of Potentials.
2. Dynamics of a Particle.
3. Dynamics of a Rigid Body—motion in two Dimensions.
4. Hydrostatics.
5. Astronomy, General and Elementary Spherical:

and (*c*) *two* subjects to be selected out of the following optional subjects, at least one of which shall be from numbers 1 to 5:—

1.	Geometry	A special subject*
2.	Algebra	Do.
3.	General Theory of Functions	Do.
4.	Differential Equations ...	Do.
5.	Special Functions ...	Do.
6.	Dynamics ...	Do.
7.	The Potentials	Do.
8.	Elasticity	Do.
9.	Hydrodynamics and Sound	Do.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

*For the special subjects prescribed under each head, please see APPENDIX IV.

I-B. Statistics.

Course of Study —Statistics.

The course shall comprise the study of:—

(*a*) Pure Mathematics. [Same as for B.A. (Honours) Branch I-A Mathematics].
(*b*) General Algebra.
(*c*) Statistical Methods including theory of probability and calculus of finite differences—
1. Statistics I. Probability, distributions and curve fitting.
2. Statistics II. Interpolation, variation and correlation and analysis of time series.
3. Statistics III. Sampling, analysis of variance, estimation and testing of hypothesis.

II-A. Philosophy.

Course of Study —Philosophy.

The course shall comprise the study of:—

1. General Psychology.

2. *Either* Theory of Knowledge *or* Ethics, provided that a candidate selecting Theory of Knowledge must have attended, and made satisfactory progress in the course of instruction in Ethics equivalent to that required of candidates for the B.A. Degree, and that a candidate selecting Ethics must have attended and made satisfactory progress in a course of instruction in European Logic and Theory of Knowledge equivalent to that required of candidates for the B.A. Degree.

3. Outlines of Indian Philosophy.

4. European Philosophy from Descartes to Kant.

5 & 6. Two subjects both of which must be selected *either* from list A *or* from list B. (Candidates who select Theory of Knowledge in 2 above should select subjects from list A, and those who select Ethics should select subjects from list B.)

List A.

(*a*) Indian Logic.
(*b*) One of the following:
i. Advaita Vedanta.
ii. Saiva Siddhanta.
iii. Dwaita.
iv. Visishtadwaita.
v. Sankhya.
vi. Buddhism.
vii. Jainism.

(*c*) Greek Philosophy.
(*d*) Scholastic Philosophy.
(*e*) Philosophy from Kant to Hegel.
(*f*) A prescribed work dealing constructively with the general problems of Philosophy.

List B.

(a) Social and Abnormal Psychology.
(b) Child and Educational Psychology.
(c) Philosophy of Religion
(d) Hindu Social Thought.
(e) A prescribed Period or School of Political Philosophy.
(f) Political Philosophy.

7. Essay.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

II. B.-Psychology.

The course shall comprise the study of—

(1) General Psychology.
(2) Schools of Psychology.
(3) Social Psychology.
(4) Psychopathology and Mental Hygiene.
(5) & (6) Two Optional Subjects to be selected from the list given below :—
 (a) Child Psychology.
 (b) Psychological Measurements.
 (c) Vocational Psychology.
 (d) Experimental Psychology (Theory and Practical).
 (e) Psychology of Religion.
 (f) Animal Psychology.
 (g) Psychology of Aesthetics.
 (h) Physiological Psychology.
 (i) Prescribed Psychological Classic.
(7) Essay.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

III. History.

Course of Study —History.

The course shall comprise the study of :—

1. The History of India.
2. Constitutional History of Great Britain and Ireland.
3. Politics.
4. Economics.

5 & 6. Special (optional) subjects. Any two subjects to be selected from a list prescribed from time to time, under the following main head*:

Politics.
History.
Indian History.
Economics.

7. Essay.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

IV. Economics.

Course of Study —Economics. The course shall comprise the study of:—

1. Principles of Economics.
2. Currency, Banking and International Trade.
3. Public Finance, including problems of public management and control.
4. Modern Economic History (India, Great Britain, France, Germany and the United States).

5 & 6. Optional Subjects—

Two out of the following subjects :—

(i) A special subject in Economics—

Either (a) Rural Economics and Co-operation *or* (b) Industrial and Labour Problems *or* (c) History of Economic Thought (with two classics to be prescribed every 3 years).

(ii) Politics (as in Branch III).

(iii) The History of India (as in Branch III).

(iv) Statistics.

7. Essay.

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

*For the special subjects prescribed under each head, please see APPENDIX IV.

V. Politics.

Course of Study —Politics.

The course shall comprise the study of :—

(1) Political Theory—The Theory of the State.
(2) History of Political Thought.
(3) Political Institutions.
(4) Economics (in common with Branch III).
(5) History of Administrative and Constitutional Development in India.
(6) One of the following optionals :—
  (*a*) Public Administration—Principles and Practice (with documents).
  (*b*) A period or topic of British Indian Administration (with documents).
(7) Essay (in common with Branches III and IV).

A candidate shall give notice through his college, a year before the date of the examination, of the particular subjects he proposes to take.

VI. * * *

VII. English Language and Literature.

Course of Study —English.

The course shall comprise the study of :—

(*a*) The History of English Language—Old and Middle English.

The History of the English Language shall include phonology, accidence and syntax, also Germanic Philology so far as it bears on the English Language. In Old and Middle English there shall be prescribed certain selected texts. Ability to translate passages from Old and Middle English texts not prescribed shall be tested.

(*b*) The History of English Literature; Shakespeare; Modern English.

A candidate shall be required to show a knowledge of the whole course of the History of English Literature. In Shakespeare a candidate shall, in addition to the detailed study of the prescribed plays, be required to show a general knowledge of Shakespeare's works and of Shakespearean criticism. In Modern English, there shall be a number of set books in prose and poetry of the 15th, 16th, 17th, 18th

and 19th centuries. A candidate shall be required to make a detailed study of the texts, marked with an asterisk, and to show a general knowledge of the other prescribed texts.

(c) Special period or subject.

A candidate shall be required to offer for the examination a special period or subject selected by him from the following list:—

1. Literature of the 14th and 15th centuries.
2. Elizabethan Literature (*i.e.* 1558—1637).
3. The Age of Milton and Dryden.
4. The Age of Pope and Johnson.
5. Wordsworth and his contemporaries.
6. Tennyson and his contemporaries.

   A candidate shall be required to show a knowledge of the writings of the cheif authors of the period selected. He shall also be examined on certain set books of the period selected.

7. Indo-Germanic Philology with special reference to Sanskrit.
8. Indo-Germanic Philology with special reference to Gothic.

   A candidate selecting 7 shall be examined in certain set books in Sanskrit. A candidate offering 8 shall be examined in select extracts of the literary remains of Gothic.

Books or groups of books set shall ordinarily continue to be the same for not less than five years. A candidate shall give notice through his college, at least a year before the date of the examination, of the books or groups of books which he proposes to offer.

VIII. Sanskrit Language and Literature.

Course of study —Sanskrit.

1. Every candidate who presents himself for this Branch of the B.A. (Honours) Degree Examination, shall be required to possess a sound knowledge of the principles of comparative philology and of the elements of comparative grammar with special reference to the important Indo-Germanic Languages.

2. The course of studies shall further consist of one part fitted to equip the student with a general knowledge of the Sanskrit Language and Literature, and also of another part fitted to enable him to acquire a special knowledge of any specified branch or branches of that Literature as prescribed from time to time.

3. The course in the general part shall comprise—

(1) The History of the Language.

(2) The History of the Literature in the Language.

(3) Grammar, Prosody and Poetics.

(4) Prescribed text-books in poetry and prose, the selections being fairly representative of the various stages in the life of the Sanskrit language and literature.

4. The course in the special part shall comprise—

(1) Prescribed text-books selected from any two of the following branches of Sanskrit Literature:—

i. Mimamsa,	iv. Vyakarana,
ii. Vedanta,	v. Alamkara, and
iii. Nyaya,	vi. Sankhya-Yoga.

Translation from Sanskrit into English and from English into Sanskrit shall be included in the papers on these text-books.

(2) A critical and comparative inquiry into the contents and value of the specified branch or branches of the literature selected for study by the candidate.

IX. Arabic Language and Literature.

Course of Study —Arabic.

1. Every candidate, who presents himself for this Branch of the B.A. (Honours) Degree Examination, shall be required to possess a sound knowledge of the principles of comparative philology and of the elements of comparative grammar with special reference to the important Semitic languages.

2. The course of study shall further consist of one part fitted to equip the student with a general knowledge of the Arabic language and literature, and also of another part fitted to enable him to acquire a special knowledge of any specified branch or branches of that literature as prescribed from time to time.

3. The course in the general part shall comprise—

(1) The History of the Language.

(2) The History of the Literature in the Language.

(3) Grammar, Prosody and Poetics.

(4) Prescribed text-books in poetry and prose, the selections being fairly representative of the various stages in the life of the Arabic language and literature.

(5) Translation from Arabic into English, and from English into Arabic.

4. The course in the special part shall comprise—

(1) Prescribed text-books selected from any specified branch or branches of Arabic Literature.

(2) A critical and comparative inquiry into the contents and value of the specified branch or branches of the literature selected for study by the candidate.

X. Syriac Language and Literature.

Course of Study —Syriac.

1. Every candidate, who presents himself for this Branch of the B. A. (Honours) Degree Examination, shall be required to possess a sound knowledge of the principles of Comparative Philology and of the elements of Comparative Grammar with special reference to the important Semitic languages.

2. The course of study shall further consist of one part to enable the student to obtain a general knowledge of the Syriac language and literature, and also of another part to enable him to acquire a special knowledge of any specified branch or branches of that literature as prescribed from time to time.

3. The course in the general part shall comprise—

(1) The History of the Language.

(2) The History of the Literature in the Language.

(3) Grammar, Prosody and Poetics.

(4) Prescribed text-books in Poetry and Prose, the selections being fairly representative of the various stages in the life of the Syriac Language and Literature.

(5) Translation from Syriac into English, and from English into Syriac.

4. The course in the special part shall comprise—

(1) Prescribed text-books selected from any specified branch or branches of Syriac Literature.

(2) A critical and comparative inquiry into the contents and value of the specified branch or branches of the literature selected for study by the candidate.

XI. A Dravidian Language or Urdu and its Literature.

Course of Study —Dravidian Language or Urdu.

The course shall comprise the study of:—

(1) The History of the Language and Philology.

(2) Prescribed text-books (General).

(3) Prescribed text-books (Special)—either period or other Group.

(4) Grammar, Prosody and Poetics.

(5) The History of the Literature and Literary Criticism.

(6) For all languages except Urdu, South Indian History and Inscriptions, and for Urdu—Arabic or Persian or Hindi.

(7) Translation from English into the language.

XII. *Hindi Language and Literature.*

Course of Study —Hindi.

The course shall comprise the study of :—

1. The History of the Language and Philology.
2. Prescribed Text-books— I—Ancient.
3. Prescribed Text-books—II—Modern.
4. Grammar, Prosody and Poetics.
5. The History of Literature and Literary Criticism.
6. Subsidiary Language—Sanskrit.
7. Translation from English into Hindi.
8. Essay (General).

XIII. *Islamic History and Culture.*

Course of Study —Islamic History and Culture

The course shall comprise the study of :—

(1) Advanced History of Islam.
(2) Islamic Law and Constitution.
(3) & (4) Two Special Subjects dealing with Periods of Islamic History to be studied along with original authorities.
(5) Politics.
(6) Economics.
(7) Essay.
} (In common with Branch III.)

Syllabuses and text-books, if any, in the above subjects shall be prescribed from time to time.

3. The scheme of examination shall be as follows :—

Part I.—Preliminary Examination.

English.

Scheme of Examination.

There shall be two written papers of three hours' duration each.

		Hours.	*Marks.*
1.	English Prose or English History ...	3	100
2.	English Composition ...	3	100
	Total ...		200

Part II.—Final Examination.

Optional Branches.

The following shall be the scheme of examination in the optional branches :—

I-A. Mathematics.

Scheme of Examination.

Three papers shall be set in Pure Mathematics, three in Applied Mathematics and one in each of the optional subjects selected. Each paper shall be of three hours' duration and shall contain questions on the principles developed in the ordinary treatment of the subject as well as exercises of moderate difficulty arising therefrom.

				Hours.	*Marks.*
*1.	Pure Mathematics	I	...	3	175
*2.	Do.	II	...	3	175
*3.	Do.	III	...	3	175
4.	Applied Mathematics	I	...	3	175
5.	Do.	II	...	3	175
6.	Do.	III	...	3	175
7.	Optional Subject	I	...	3	175
8.	Do.	II	...	3	175
				Total ...	1,400

I-B. Statistics.

Scheme of Examination.

The examination shall be both written and practical and the scheme of examination shall be as follows :—

				Hours.	*Marks.*
*1.	Pure Mathematics	I	...	3	175
*2.	Do.	II	...	3	175
*3.	Do.	III	...	3	175
4.	General Algebra		...	3	175
5.	Statistics	I	...	3	175
6.	Do.	II	...	3	175
7.	Do.	III	...	3	175
	Practical Examination		...	3	150
	Record Note-books		...		25
				Total ...	1,400

*These three papers are common to Branches I-A and I-B.

Each candidate shall submit his note book containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the Professor under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted at the time of the practical examination to the Examiners engaged in conducting the examination.

II-A. Philosophy.

Scheme of Examination. There shall be a written examination of seven papers of 3 hours' duration each, and a *viva voce* test.

		Hours.	*Marks.*
1.	Essay ...	3	200
2.	General Psychology ...	3	200
3.	Theory of Knowledge or Ethics	3	200
4.	Outlines of Indian Philosophy	3	200
5.	European Philosophy—Descartes to Kant ...	3	200
6.	Special Subject I ...	3	200
7.	Special Subject II ...	3	200
	Total ...		1,400

The *viva voce* test shall be held as soon as possible after the Examiners have valued the written answers of the candidates. No fixed proportion of marks shall be assigned to it; its purpose is to assist the Examiners in placing the candidates.

II-B. Psychology

Scheme of Examination There shall be a written examination of seven papers of 3 hours' duration each. and a *viva voce* test.

		Hours.	*Marks.*
1.	Essay ...	3	200
2.	General Psychology ...	3	200
3.	Schools of Psychology ...	3	200
4.	Social Psychology ...	3	200
5.	Psychopathology and Mental Hygiene ...	3	200
6.	Special Subject I ...	3	200
7.	Special Subject II ...	3	200
	Total ...		1,400

The *viva voce* test shall be held as soon as possible after the Examiners have valued the written answers of the candidates. No fixed proportion of marks shall be assigned to it; its purpose is to assist the Examiners in placing the candidates.

III. History.

Scheme of Examination. There shall be seven papers of 3 hours' duration each.

		Hours.	Marks.
*1.	Essay ...	3	200
2.	The History of India ...	3	200
3.	Constitutional History of Great Britain and Ireland...	3	200
**4.	Politics—General ...	3	200
†5.	Economics—General ...	3	200
6.	Special Subject I ...	3	200
7.	Special Subject II ...	3	200
	Total ...		1,400

IV. Economics.

Scheme of Examination. There shall be seven papers of 3 hours' duration each.

		Hours.	Marks.
1.	Principles of Economics ...	3	200
2.	Currency, Banking and International Trade	3	200
3.	Public Finance	3	200
4.	Modern Economic History ...	3	200
5.	Optional Subject I ...	3	200
6.	Optional Subject II ...	3	200
*7.	Essay	3	200
	Total ...		1,400

* This question paper is common to Branches III, IV, V and XIII.
** This question paper is common to Branches III and XIII.
† This question paper is common to Branches III, V and XIII.

V. Politics.

Scheme of Examination. There shall be seven papers of 3 hours' duration each.

	Hours.	Marks.
1. Political Theory—The Theory of the State	3	200
2. History of Political Thought ...	3	200
3. Political Institutions ...	3	200
†4. Economics—General ...	3	200
5. History of Administrative and Constitutional Development in India	3	200
6. Optional Subject	3	200
*7. Essay	3	200
Total ...		1,400

VI. * * *

VII. English Language and Literature.

Scheme of Examination. There shall be both a written and a *viva voce* examination. The written examination shall consist of three divisions. There shall be three papers in division (a), five papers in division (b), and two papers in division (c), as follows:—

	Hours.	Marks.
1. Beowulf and other Old English texts	3	150
2. Chaucer and other Middle English texts	3	150
3. History of the English Language	3	150
4. Shakespeare	3	175
5. Modern English Literature—Paper I ...	3	125
6. Do. Paper II ...	3	125
7. Do. Paper III ...	3	125
8. Essay	3	100
9. Special Period—Paper I ...	3	150
10. Special Period—Paper II ...	3	150
Total ...		1,400

* This question paper is common to Branches III, IV, V and XIII.

† This question paper is common to Branches III, V and XIII.

The *viva voce* examination shall be held as soon as possible after the Examiners have valued the written answers of the candidates. No fixed proportion of marks shall be assigned to it. Its purpose is to assist the Examiners in placing the candidates.

VIII. *Sanskrit Language and Literature.*

1. There shall be a paper on the principles of Comparative Philology and the elements of Indo-Germanic Comparative Grammar.

2. In addition to this there shall be in the general part—

(1) One paper on the History of the Sanskrit Language and Literature;

(2) One paper on Grammar, Prosody and Poetics;

(3) One paper on the prescribed text-books, in which also there shall be questions on the grammar, structure and idiom of the language;

and in the special part there shall be—

(1) Four papers (two on each of the two selected Branches of Sanskrit Literature) on the prescribed text-books;

Questions in translation from Sanskrit into English and *vice versa* shall be included in these papers, the passage given for translation not being taken from any of the prescribed text-books;

(2) An essay in English on a subject intimately related to the specified branch or branches of Sanskrit literature from which the text-books of the special part are prescribed.

Scheme of Examination. The scheme of examination shall be as follows:—

		Hours.	Marks.
1.	Comparative Philology and Comparative Grammar ...	3	200
2.	History of the Sanskrit Language and Literature ...	3	150
3.	Prescribed text-books—General	3	150
4.	Grammar, Prosody and Poetics	3	150
5.	Prescribed text-books— Special Subject I—Paper I	3	150
6.	Do. do. I—Paper II	3	150
7.	Do. do. II—Paper I	3	150
8.	Do. do. II—Paper II	3	150
9.	Essay	3	150
	Total ...		1,400

IX. Arabic Language and Literature.

1. There shall be a paper on the principles of Comparative Philology and the elements of Semitic Comparative Grammar.

2. In addition to this there shall be in the general part:—

(1) One paper on the History of the Arabic Language and Literature;

(2) One paper on Grammar, Prosody and Poetics;

(3) One paper on the prescribed text-books in which also there shall be questions on the grammar, structure and idiom of the language;

(4) One paper on translation from as well as into Arabic, the passage given for translation not being taken from any of the prescribed text-books;

and in the special part there shall be—

(1) Three papers on the prescribed text-books;

(2) An essay in English on a subject intimately related to the specified branch or branches of Arabic Literature from which the text-books of the special part are prescribed.

The scheme of examination shall be as follows:—

Scheme of Examination.

			Hours.	*Marks*
1.	Comparative Philology and Comparative Grammar	...	3	200
2.	History of the Arabic Language and Literature	...	3	150
3.	Prescribed text-books— General	...	3	150
4.	Do. Special I	...	3	150
5.	Do. Special II	...	3	150
6.	Do. Special III	...	3	150
7.	Grammar, Prosody and Poetics.		3	150
8.	Translation ...	...	3	150
9.	Essay	...	3	150
		Total	...	1 400

X. Syriac Language and Literature.

1. There shall be a paper on the principles of Comparative Philology and the elements of Semitic Comparative Grammar.

2. In addition to this, there shall be in the general part—

(1) One paper on the History of the Syriac Language and Literature;

(2) One paper on Grammar, Prosody and Poetics;

(3) One paper on the prescribed text-books in which also there shall be questions on the grammar, structure and idiom of the language;

(4) One paper on translation from as well as into Syriac, the passage given for translation not being taken from any of the prescribed text-books;

and in the special part there shall be—

(1) Three papers on the prescribed text-books;

(2) An essay in English on a subject intimately related to the specified branch or branches of Syriac Literature from which the text-books of the special part are prescribed.

Scheme of Examination. The scheme of examination shall be as follows:—

		Hours.	*Marks.*
1.	Comparative Philology and Comparative Grammar ...	3	200
2.	History of the Syriac Language and Literature ...	3	150
3.	Prescribed text-books—General	3	150
4.	Prescribed text-books—Special I ...	3	150
5.	Prescribed text-books—Special II ...	3	150
6.	Prescribed text-books—Special III ...	3	150
7.	Grammar, Prosody and Poetics	3	150
8.	Translation	3	150
9.	Essay	3	150
		Total ...	1,400

XI. A Dravidian Language or Urdu and its Literature.

Scheme of Examination. Candidates shall be examined in the following subjects and there shall be eight papers as follows :—

		Hours.	*Marks.*
1.	Essay	3	200
2.	The History of the Language and Philology ...	3	200
3.	Prescribed text-books—General	3	150
4.	Prescribed text-books—Special (either period or group) ...	3	150
5.	Grammar, Prosody and Poetics	3	150
6.	History of Literature and Literary Criticism ...	3	200
7.	For all languages except Urdu, South Indian History and Inscriptions, and for Urdu —Arabic or Persian or Hindi	3	200
8.	Translation from English into the language	3	150
	Total ...		1,400

XII. Hindi Language and Literature.

Scheme of Examination. There shall be eight papers as follows :—

		Hours.	*Marks.*
1.	Essay	3	200
2.	The History of the Language and Philology ...	3	200
3.	Prescribed text-books— I—Ancient ...	3	150
4.	Do. II—Modern ...	3	150
5.	Grammar, Prosody and Poetics	3	150
6.	The History of Literature and Literary Criticism ...	3	200
7.	Subsidiary Language—Sanskrit*	3	200
8.	Translation	3	150
	Total ...		1,400

*(*Note* :—The paper on *Subsidiary Language—Sanskrit*—shall deal with prescribed Text-books and shall include also a passage or passages for translation from English into Sanskrit, the time allotted to Translation being one hour.)

XIII. *Islamic History and Culture.*

Scheme of Examination. There shall be seven papers of three hours' duration each :—

			Hours.	*Marks.*
1.	Advanced History of Islam	...	3	200
2.	Islamic Law and Constitution.		3	200
3.	Special Subject I	...	3	200
4.	Do. II	...	3	200
*5.	Politics	...	3	200
†6.	Economics—General	...	3	200
‡7.	Essay	...	3	200
		Total	...	1,400

B.A. proceeding to B.A. (Hons.)—exempted in Part I. 4. A candidate for the B.A. (Honours) Degree who has passed the B.A. (Pass) Degree Examination of this University or who has passed a degree examination of some other University recognised as equivalent thereto shall be exempted from passing in the Preliminary Examination in Part I—English.

B.Sc. in Mathematics proceeding to B.A. (Hons.) in Mathematics—exempted in English. 5. A candidate who has qualified for the Degree of Bachelor of Science with Mathematics as main subject shall be permitted to appear for the B.A. (Honours) Degree Examination in Branch I—Mathematics—after a two years' course in a Constituent or an Affiliated College. He shall be exempted from examination in the Preliminary Examination in Part I—English.

B.Sc. (Hons.) proceeding to B.A. (Hons.)—exempted from Part I—English—Preliminary. 6. A candidate who has qualified for the Bachelor of Science (Honours) Degree of this University shall be permitted to appear for the Bachelor of Arts (Honours) Degree Examination after undergoing the prescribed course of study in the Branch of subject or subjects selected by him for two academic years in a Constituent or an Affiliated College

*In common with Branch III.

†In common with Branches III and V.

‡In common with Branches III, IV and V.

of this University. He shall be exempted from examination in Part I—English (Preliminary Examination).

A candidate coming under the provisions of this Regulation shall be declared to have passed the examination if he obtains not less than 40 per cent of the total marks in the Branch of subject or subjects selected by him and not less than 30 per cent of the marks in each division of the examination.

They shall not be eligible for prizes or medals awarded by the University.

Permitted to sit for Hons. Examination only once—provision for withdrawal.

7. No candidate shall be permitted to undergo the complete Final Examination in Honours more than once. A candidate for the Final Examination shall be permitted to withdraw from the examination, provided he has not sat for the last paper in the examination, and provided he has given notice of withdrawal to the Registrar within three clear days from the date of the last paper which he answered. He shall be permitted to appear again for the Final Examination in the following year without producing any additional certificate of attendance.

Note:—A candidate shall be deemed to have sat for the last paper if he has entered the hall in which the examination for the last paper is held.

Time limit for appearance for Final Examination.

8. A candidate for the B. A. (Honours) Degree shall be required to appear for the Final Examination in Honours—

(1) not later than the end of the fourth year after commencing the Honours Degree course in a college;

or

(2) in the case of a Bachelor of Arts or Science proceeding to the Honours Degree examination, not later than three years after commencing the Honours Degree course in a college.

Admission to Part I Examination.

9. The Preliminary Examination, Part I—English—shall be held for candidates taking the three years' course in Honours, as prescribed in Regulation 1-A.

No candidate shall be admitted to the examination unless he has satisfied the condition prescribed in Regulation 1-A (1) and has undergone the prescribed course of study.

Exemption in Part I Examination. Admission to Final (Part II) Examination.

10. No candidate other than a candidate exempted under the provisions of Regulations 4, 5 and 6 shall be admitted to the Final Examination (Part II) in Honours unless he has passed the Preliminary Examination (Part I)—English.

Eligibility for the Degree.

11. No candidate shall be eligible for the B.A. (Honours) Degree until he has passed the Preliminary Examination, Part I—English — (unless otherwise exempted), and the Final Examination (Part II) in one of the branches of knowledge as prescribed.

Marks qualifying for a pass in Part I.

12. *Part I—English—Preliminary Examination.*—A candidate who secures not less than 40 per cent of the aggregate marks in the two papers in English shall be declared to have passed the examination in Part I.

A candidate who secures not less than 60 per cent of the aggregate marks shall be declared to have passed the examination with distinction.

Marks qualifying for a pass in Part II.

13. *Part II—Final Examination.*—A candidate shall be declared to have passed the examination in one of the branches of knowledge for the B.A. (Honours) Degree if he obtains not less than 40 per cent of the total marks and not less than 30 per cent in each division of the examination. All the other candidates shall be deemed to have failed in the examination for Honours. The divisions shall be as follows :—

Divisions of subjects.

Branch I-A.—(*a*) Pure Mathematics,
(*b*) Applied Mathematics,
(*c*) Optional subjects.

Branch I-B.—(*a*) Pure Mathematics and General Algebra, (*b*) Statistics I, II and III, (*c*) Practical.

Branch II-A.—(*a*) (i) General Psychology; (ii) Theory of Knowledge or Ethics, (*b*) (i) Outlines of Indian Philosophy; (ii) European Philosophy, (*c*) (i) Special Subjects; (ii) Essay.

Branch II-B.—(*a*) (i) General Psychology; (ii) Social Psychology; and (iii) Essay; (*b*) (i) Schools of Psychology; and (ii) Psychopathology and Mental Hygiene; (*c*) Special Subjects.

Branch III.—(*a*) Indian History and Constitutional History, (*b*) Politics and Economics, (*c*) Special Subjects.

Branch IV.—(*a*) Principles of Economics and Modern Economic History, (*b*) Currency, Banking, etc., and Public Finance, (*c*) Special (Optional) Subjects.

Branch V.—(*a*) Political Theory, History of Political Thought, and Political Institutions; (*b*) Economics and History of Administrative and Constitutional Development in India; (*c*) Optional Subject.

(*Note*.—No special minimum is prescribed or the Essay paper in Branches III, IV and V)

Branch VI. * * *

Branch VII.—(*a*) English Language, (*b*) English Literature and Essay, (*c*) Special Period or Subject.

Branches VIII, IX and X.—(*a*) Comparative Philology and Comparative Grammar, (*b*) General Part, (*c*) Special Part and Essay.

Branch XI.—(*a*) History of Language and Philology, and History of Literature and Literary Criticism, (*b*) Prescribed text-books (General and Special), and Grammar, Prosody and Poetics, (*c*) Essay, Translation from English into the language and South Indian History and Inscriptions (in the case of Dravidian Languages) *or* Arabic, or Persian, or Hindi (in the case of Urdu).

Branch XII.—(*a*) History of Language and Philology, and History of Literature and Literary Criticism, (*b*) Prescribed text-books, Grammar, Prosody and Poetics, (*c*) Essay, Translation and Subsidiary Language.

Branch XIII.—(*a*) Advanced History of Islam and Islamic Law and Constitution; (*b*) Politics and Economics; (*c*) Special Subjects.

(*Note.*—No special minimum is prescribed for the Essay paper.)

Classification of successful candidates.

14. Successful candidates in the examination shall be ranked in the order of proficiency as determined by the total marks obtained by each and shall be arranged in three classes :—

Candidates who obtain not less than sixty per cent of the aggregate marks shall be placed in the first class; those who obtain less than sixty per cent but not less than fifty per cent shall be placed in the second class; and all the other successful candidates shall be placed in the third class.

Candidates for (Hons.) recommended for B.A. Degree—when and how.

15. In the event of a candidate for the B.A. (Honours) Degree failing to satisfy the Examiners he may be recommended by them for the B.A. Degree, provided that he obtains not less than $33\frac{1}{3}$ per cent of the total marks and not less than 25 per cent in each division of the examination.

Failed or withdrawn candidates from (Hons.) Examination to appear for B.A.

16. (*a*) A candidate not already eligible for the B.A. Degree, who, having failed completely in the B.A. (Honours) Degree Examination, desires to appear for the B.A. Degree Examination shall be allowed to do so without the production of a further certificate of attendance in a Constituent or an Affiliated College.

(*b*) A candidate not already eligible for the B. A. Degree who, after being registered, presents himself for the

B.A. (Honours) Degree Examination in any year and withdraws from the same and is prevented, through illness or otherwise, from subsequently presenting himself for examination within the period prescribed under Regulation 8 (1) of this Chapter, shall be allowed to appear for the B. A. Degree Examination without the production of a further certificate of attendance in a Constituent or an Affiliated College.

Candidates appearing under this Regulation for the B.A. Degree Examination shall appear for all the Parts of the Examination and shall take under Part III the same optional subject which they studied for the Honours course except in the case of candidates who took English Language and Literature for the B.A. (Honours) Degree, who may be permitted to take any optional group other than Group (*ii*) in the B.A. Degree Examination.

CHAPTER XLV.

M.A. Degree Examination.

B. A. (Hons.)—when to take M. A. Degree.

1. A candidate who has qualified for the B.A. (Honours) or B. Sc. (Honours) Degree of this University by passing the prescribed examination under the Regulations may, without further examination but upon payment of the prescribed fee, proceed to take the M. A. Degree of this University at any Convocation subsequent to his taking the B. A. (Honours) or B. Sc. (Honours) Degree.

Recommended B.A. to appear for M. A.

2. A candidate for the B.A. (Honours) Degree Examination of this University who has been recommended by the Examiners for the B.A. Degree (under Regulation 15 of Chapter XLIV *supra*) shall be permitted to appear for the M.A. Degree Examination in the same subject or subjects after undergoing the course of study in the subject or subjects for one academic year in a college recognised by or affiliated to the University for Honours.

B. A.s may qualify for M.A. after post-graduate course.

3. A candidate who has passed the B.A. Degree Examination of this Universtiy or an Examination of some other University accepted by the Syndicate as equivalent thereto, shall be permitted to appear and qualify for the M.A. Degree Examination of this University after a further course of two academic years in a Constituent or an Affiliated College of this University. The courses of studies, syllabuses, subjects for the examination, scheme of marks and time-tables, marks qualifying for a pass and divisions of the subjects for the M. A. Degree Examination shall be the same in all Branches as for the Final Examination for the B.A. (Honours) Degree conducted in the year in the subjects in the corresponding Branch.

He shall be exempted from passing the B.A. (Honours) Preliminary Examination—Part I—English :

Provided, however, that a candidate who has passed the B.Sc. Degree Examination of this University or some other

recognised University accepted by the Syndicate as equivalent thereto, and has taken Mathematics as the main subject for the Degree, shall be permitted to appear and qualify for the M.A. Degree Examination in Mathematics, after a further course of two academic years in a Constituent or an Affiliated College of this University :

Provided, however, that graduates of other Universities shall not be eligible to appear for the examination unless they have resided for two academic years, prior to the date of their application for examination, within the University limits or area, and have pursued a course of study in a Constituent or an Affiliated College of the University :

Provided, however, that a candidate who has appeared for the M.A. Degree Examination in 1938 or earlier and failed therein shall be permitted to appear for the examination in any year without undergoing a further course for two years.

Such Bachelors of Arts, when qualified, may upon payment of the prescribed fee, proceed to the Degree of M.A.

4. A candidate who has undergone the courses of study in the subject or subjects prescribed for the M.A. Degree Examination in Regulation 3 *supra* for two academic years in a Constituent or an Affiliated College of this University, the whole or part of which was prior to the academic year 1936-37, shall be permitted to appear for the M.A. Degree Examination of 1938 *et seq.* on the production of the necessary certificates of attendance in the subject or subjects earned by him prior or subsequent to 1936-37.

M. A.s to qualify in another subject.

5. A candidate who has qualified for the B.A. (Honours) Degree or the M.A. Degree of this University in one subject shall be permitted to appear again for the M.A. Degree Examination in a different branch or subject where no practical laboratory work is involved, without undergoing a further course of study in a college of this University, provided, however, that a candidate who has qualified for the B.A. (Honours) or M.A. Degree shall have taken the M.A. Degree before appearing for the M.A. Degree Examination in the new branch or subject or subjects.

Such candidates under the above Regulation shall not be admitted at a Convocation a second time, but special Post-Gradute Certificates setting forth the further subject or subjects passed by them and the dates of such examination shall be given to them.

Successful candidates under the above Regulation shall be placed in a separate list. They shall not be eligible for prizes or medals awarded by the University.

Transitory provision *re* B.A.'s appearing for M.A. in certain languages.

6. A Bachelor of Arts of this University, who has qualified in Arabic, Persian, Tamil, Telugu, Kannada, Malayalam or Urdu under Part III, Group (v), may, after an interval of two academic years from the date of qualifying for that Degree, qualify for the Degree of Master of Arts (M.A.), by passing the prescribed examination in the same language :

Provided that a Bachelor of Arts who has taken Persian under Part III, Group (v), may be permitted to qualify for the Degree of Master of Arts in Urdu Language and Literature.

A Bachelor of Arts of this University who has also qualified for an Oriental Title of this University may, after an interval of two academic years from the date of qualifying for the B.A. Degree, qualify for the Degree of Master of Arts (M.A.) by passing the prescribed examination in the language in which he has taken the Oriental Title, provided, however, that where the Title comprises two languages the candidate may offer for the M.A. Degree Examination either of the languages.

The course of studies, syllabuses, subjects, scheme of examination and time-tables for the examination for the Degree of Master of Arts shall be the same as for the Final Examination for the Degree of Bachelor of Arts (Honours) provided that candidates under this Regulation shall not be required to undergo the prescribed course of study in a Constituent or an Affiliated College.

The M.A. Degree Examination under this Regulation will be held till the end of the academic year 1952-53.

CHAPTER XLVI.

Degree of Master of Letters (M. Litt.)

(Common to the Faculties of Arts, Fine Arts and Oriental Learning)

Eligibility.

1. A candidate may present himself for the Degree of Master of Letters (M. Litt.) under the following conditions :—

(a) *Faculty of Arts*—(i) A Bachelor of Arts of this University, or of any other University recognised by the Syndicate as equivalent thereto, after two years of research under supervision and after registration.

(ii) A Bachelor of Arts (Honours) or Master of Arts of this University, or of any other University recognised by the Syndicate as equivalent thereto, after one year's research under supervision and after registration.

(b) *Faculty of Fine Arts*—A Bachelor of Music of this University, or of any other University recognised by the Syndicate as equivalent thereto, after two years of research under supervision and after registration.

(c) *Faculty of Oriental Learning*—(i) A Bachelor of Oriental Learning of this University, or of any other University recognised by the Syndicate as equivalent thereto, after two years of research under supervision and after registration.

(ii) A Bachelor of Oriental Learning (Honours) of this University, or of any other University recognised by the Syndicate as equivalent thereto, after one year's research under supervision and after registration :

provided that it shall be competent for the Syndicate to dispense with a strict compliance with the above Regulation in very special cases :

provided further that graduates of other Universities shall not be eligible to submit theses for the Degree, unless they have resided within the University limits or area for two years, subsequent to registration, and have pursued a course of research in the University or in a Constituent or Affiliated College thereof recognised by the Syndicate for this purpose during this period.

Registration

2. A candidate for the Degree shall apply to the Registrar, in the prescribed form together with the fee* laid down, so as to reach the Registrar on any day in the month of January or August each year, giving the following particulars :—

(*a*) his qualification and attainments and previous study and research, if any ;

(*b*) the special subject in which he intends to prosecute research. The subject of research shall be one which relates to the main branch of knowledge chosen for the preliminary Degree (*i.e.* a Graduate in arts may choose the subject of Part I or the main subject under Part III; a Graduate in Honours or a Master of Arts may choose the main subject of his Branch; a Bachelor of Music may choose the subject of Music; and a Bachelor of Oriental Learning (Pass or Honours) may choose the main language offered for the Degree; and

(*c*) the name of the Teacher of this University or the Teacher of an Institution recognised by or affiliated to the University, under whose supervision and guidance he proposes to work, accompanied by the written consent of the Teacher agreeing to supervise his work; and, in the case of a candidate proposing to do work in an Institution, from the Head of the Institution permitting him to work.

* The fee prescribed for registration for the M. Litt. Degree is Rs. 50/-.

3. Every application shall be considered by the Syndicate; and, if approved, the candidate shall be registered as a candidate for the Degree.

Option.

4. Every candidate so registered shall have the option, subject to approval by the Syndicate, and definite recommendation of the supervisor concerned, to submit a thesis for either the Degree of M.Litt. or Ph.D., if he satisfies the conditions regarding the duration of supervised research, in each case:

provided, however, as a temporary measure, it shall be competent for the Syndicate on the recommendation of the supervisor concerned, to permit such research students as had already been registered for the M. Litt. Degree prior to the introduction of these Regulations to apply for the Ph. D. Degree.

Approval of Institutions.

5. (i) The Institutions for purposes of approval for research shall ordinarily be Departments of the University or Colleges affiliated to or recognised by the University up to the Honours standard in the Branch of Study concerned. The Syndicate, however, may, in regard to First Grade Colleges, recognise particular Departments of Study, if it is satisfied both with regard to the facilities available and the qualifications of the person for supervision, such recognition being for a period of time and renewable on such conditions as the Syndicate may lay down. In regard to subjects for which research facilities are not available within the University, the Syndicate may recognise All-India Institutes for the purpose.

(ii) In the case of women students, the Syndicate may recognise a supervisor in a First Grade College in the City of Madras, provided that the facilities available in such a college supplemented by the facilities of the University Library are sufficient for adequate study under the supervisor.

Submission of thesis.

6. After the expiration of the period of post-graduate study and research work, every candidate shall submit with his application for the Degree four copies of the thesis, printed or typewritten, embodying the results of the

research carried out by him, together with the prescribed fee.*

The candidate shall also submit with his application and thesis a certificate from the supervisor under whom he worked that the thesis submitted is a record of research work done by the candidate during the period of study under him, and that the thesis has not previously formed the basis for the award to the candidate of any Degree, Diploma, Associateship, Fellowship or other similar title, together with a statement from the supervisor indicating the extent to which the thesis represents independent work on the part of the candidate.

Date for submission of application and thesis.

7. The application for the Degree and the thesis must be forwarded so as to be received by the Registrar on any day in the month of January or August and after completion of the research work in accordance with the conditions laid down in Regulation 2 *supra*.

A candidate may also forward, as supplementary papers to his thesis, printed copies of any contribution or contributions to the knowledge of his subject, or any cognate branch, he may have published.

Evaluation of thesis.

8. The thesis shall be referred by the Syndicate, for report, to a Board of three Examiners; at the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination; provided, however, it shall be competent for the Syndicate, in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in India, should the first mentioned Board of Examiners consider this necessary prior to coming to a decision; and after receipt from the Board or Boards of the report on the thesis and on the oral examination, if any, the Syndicate may decide whether the candidate has qualified for the Degree or not. The decision of the Syndicate shall be published in the *Fort St. George Gazette.*

*The fee prescribed for applying for the M.Litt. Degree is Rs. 150/-.

Publication.

9. The thesis, whether approved or not, shall not be published without the sanction of the Syndicate, and the Syndicate may grant permission for publication under such conditions as it may impose.

Number of chances.

10. A candidate shall not be permitted to submit a thesis for the Degree on more than two occasions; provided, however, it shall be open to the Syndicate, if the Board of Examiners so recommend, to permit the candidate to submit a thesis on a third occasion.

Exceptions.

11. Teachers who are working in the University or Teachers in Colleges affiliated to or recognised by the University and who are Heads of Departments in Honours or First Grade Colleges may be permitted to submit theses for the Degree without working under supervision, provided, however, they register themselves for the Degree beforehand as specified in Regulation 2 *supra*, and provided further the Syndicate is satisfied with the facilities available for research in such institutions. This concession shall not apply to Teachers who are not Heads of Departments. Teachers on the staff of an Affiliated or Constituent College may be permitted to register for a Master's Degree and to prosecute research in the college for that Degree while still working as a member of the staff.

CHAPTER XLVII.

Degree of Doctor of Philosophy (Ph. D.)

[Common to the Faculties of Arts, Science, Medicine, Engineering, Teaching, Agriculture, Veterinary Science, Technology, Fine Arts and Oriental Learning.]

Eligibility.

1. A candidate may present himself for the degree of Doctor of Philosophy (Ph.D.) under the following conditions :—

(a) A Bachelor of Arts, or a Bachelor of Science, or a Bachelor of Music, or a Bachelor of Oriental Learning, of this University or of any other University recognised by the Syndicate as equivalent thereto, five years after having qualified for the Degree of B.A. or B.Sc., etc., and not earlier than three years from the date of registration by the Syndicate for the purpose of pursuing research in accordance with the conditions laid down in Regulation 2 *infra*.

(b) A Bachelor of Arts (Honours), or
A Master of Arts, or
A Bachelor of Science (Honours), or
A Bachelor of Oriental Learning (Honours), or
A Bachelor of Medicine and Surgery, or
A Bachelor of Engineering, or
A Bachelor of Science in Agriculture, or
A Bachelor of Veterinary Science, or
A Bachelor of Science in Technology,

of this University, or of any other University recognised by the Syndicate as equivalent thereto, three years after having qualified for the Degree and not earlier than two years from the date of registration by the Syndicate for the purpose of pursuing research in accordance with the conditions laid down in Regulation 2 *infra*.

(c) A Master of Letters, or a Master of Science, or a Master of Oriental Learning of this University or of any other University recognised by the Syndicate as equivalent thereto, one year after having qualified for the Degree and not earlier than one year from the date of registration.

(d) A Master of Education shall be permitted to submit a thesis for the Ph. D. Degree two years after having qualified for the Master's Degree, and not earlier than two years from the date of registration:

provided that graduates of other Universities shall not be eligible to submit theses for the Degree unless they have resided within the University limits or area, for three years, subsequent to registration, and have pursued a course of research in the University or Constituent or Affiliated College thereof for this period. It shall be competent for the Syndicate, however, in exceptional cases, where proof of research work already done is available, to reduce this period by a maximum of one year:

provided further that candidates registered for the M. Litt. or M.Sc. Degree shall have the option under conditions specified of supplicating for the Ph.D. Degree after the specified period of research under supervision.

Registration.

2. A candidate for the Degree shall apply to the Registrar in the prescribed form together with the fee* laid down so as to reach the Registrar on any day in the month of January or August each year giving the following particulars :—

(a) his qualifications and attainments and previous study and research, if any;

(b) the special subject in which he intends to prosecute research. The subject of research shall be one which relates to the main branch of knowledge chosen for the first Degree, or in the case of the Faculties of Medicine,

* The fee prescribed for registration for the Ph.D. Degree is Rs. 50/-.

Veterinary Science and Agriculture the subject specified for the M. Sc. Degree ; and

(*c*) the name of the Teacher of this University or the Teacher of an Institution recognised by or affiliated to this University, under whose supervision and guidance he proposes to work and the name of the Laboratory where necessary or Institute or College where he proposes to conduct his research, accompanied by the written consent of the Teacher, agreeing to supervise his work, and in the case of a candidate proposing to do work in an Institution from the Head of the Institution permitting him to work :

provided that in the case of candidates who have already qualified for the M. Litt. or M. Sc. or M. Ed. or M. O. L. Degree of this University, they shall be permitted to submit a thesis on the basis of independent research.

3. Every application shall be considered by the Syndicate, and, if approved, the candidate shall be registered as a candidate for the Degree.

Approval of Institutions.

4 (i) The Institutions for purposes of approval for research shall, subject to the provisions under clause (iii) *infra*, ordinarily be Departments of the University or College affiliated to or recognised by the University up to the Honours standard in the Branch of Study concerned, or Special Departments of Professional Colleges. The Syndicate, however, may, in regard to First Grade Colleges, recognise particular Departments of Study, provided it is satisfied both with regard to the Laboratory facilities available and the qualifications of the person for supervision, such recognition being for a period of time and renewable subject to such conditions as the Syndicate may lay down. In regard to subjects for which research facilities are not available within the University, it shall be competent for the Syndicate to recognise, on individual merits, Research Institutes or Departments of an All-India character and the Teachers or Officers employed therein for purposes of enabling persons to pursue research in such Institutes or

Departments with a view to qualifying for the Ph. D. Degree of this University.

(ii) In the case of women students, the Syndicate may recognise a supervisor in a First Grade College (in Arts) in the City of Madras, if it is satisfied that the facilities available in such a College supplemented by the facilities of the University Library are sufficient for adequate study under the supervisor.

(iii) Graduates of this University who produce satisfactory evidence of having conducted research for the Doctorate Degree prior to 1945-46 in Institutes or Colleges recognised by the Syndicate for this purpose, may be exempted from a part or whole of the period prescribed for research under supervision and permitted to submit thesis for the Ph. D. Degree.

Submission of thesis.

5. After the expiration of the period of post-graduate study and research, every candidate shall submit with his application for the Degree four copies of the thesis, printed or typewritten, embodying the results of the research carried out by him, together with the prescribed fee.*

Every candidate other than those who have already qualified for the M. Litt., M. Sc., M. Ed., or M.O.L. Degree of this University shall also submit with his application and thesis a certificate from the Teacher under whom he worked that the thesis submitted is a record of research work done by the candidate during the period of study under him, and that the thesis has not previously formed the basis for the award to the candidate of any Degree, Diploma, Associateship, Fellowship, or other similar title, together with a statement from the Teacher indicating the extent to which the thesis represents independent work on the part of the candidate. If the thesis submitted has formed in part the basis for the award of a previous research degree, the candidate shall clearly set forth in a preface or written statement the portion or portions upon which has been based the award of the previous degree.

In the case of those who have already qualified for the Degree of Master of Letters, or Master of Science, or

* The fee prescribed for applying for the Ph. D. Degree is Rs. 200/-.

Master of Education, or Master of Oriental Learning, the thesis shall be accompanied by a declaration signed by the candidate that it has been composed by himself independently and a certificate that it has not previously formed the basis for the award of any Degree other than a Master's Degree, Diploma, Associateship, Fellowship or other similar title.

Date for submission of application and thesis.

6. The application for the Degree and the thesis must be forwarded so as to be received by the Registrar on any day in the month of January or August and after completion of the research work in accordance with the conditions laid down in Regulation 2 *supra*.

Supplementary papers.

A candidate may also forward as supplementary papers to his thesis printed copies of any contribution or contributions to the knowledge of his subject or of any cognate branch of science he may have published in Journals or Periodicals and the names of such Journals or Periodicals.

Evaluation of thesis.

7. The thesis shall be referred by the Syndicate, for report, to a Board of three Examiners; at the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination; provided, however, it shall be competent for the Syndicate, in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in India, should the first mentioned Board of Examiners consider this necessary prior to coming to a decision. After receipt from the Board or Boards of the report on the thesis and on the oral examination, if any, the Syndicate may decide whether the candidate has qualified for the Degree or not :

provided that it shall be competent for the Board of Examiners, if a candidate fails to reach the standard for the Doctorate, to recommend him for the Degree of M. Litt. or M. Sc., as the case may be :

provided, further, in the case of graduates in Medicine and Veterinary Science, who have not previously qualified for the M. Sc. Degree, the candidates shall also be required to take the examination test

prescribed in the branch of study for the M.Sc. Degree in addition to the submission of the thesis.

The decision of the Syndicate shall be published in the *Fort St. George Gazette.*

Number of chances.

8. A candidate shall not be permitted to submit a thesis for the Degree on more than two occasions; provided, however, it shall be competent for the Syndicate, if the Board of Examiners so recommend, to permit the candidate to submit a thesis on a third occasion.

Publication of thesis.

9. The thesis, whether approved or not, shall not be published without the sanction of the Syndicate, and the Syndicate may grant permission for the publication under such conditions as it may impose.

Exceptions.

10. Teachers who are working in the University or Teachers in Colleges affiliated to or recognised by the University and who are Heads of Departments in Colleges may be permitted to submit theses for the Degree without working under supervision even if they have not previously qualified for the M.Litt. Degree or M. Sc. Degree of this University; provided, however, they register themselves for the Degree as specified in Regulation 2 *supra*; and provided further the Syndicate is satisfied with the facilities available for research in such institutions. This concession shall not apply to Teachers who are not Heads of Departments.

In the case of candidates applying for the Ph. D. Degree in the Faculties of Medicine and Veterinary Science, who have not already qualified for the M.Sc., the examination test prescribed for the M. Sc. shall be passed in addition to the approval of the thesis for the Ph. D. before the Degree is awarded. Should such a candidate pass in one Part of the test, he shall be exempted in that Part at a subsequent appearance.

CHAPTER XLVIII.

Degree of Doctor of Letters (D. Litt.)

(Common to the Faculties of Arts, Teaching, Fine Arts and Oriental Learning.)

Eligibility.

1. A Master of Letters or a Master of Oriental Learning or a Doctor of Philosophy of this University may present himself for the Degree of Doctor of Letters (D. Litt.), the highest Degree of this University in the Faculties of Arts, Teaching, Fine Arts and Oriental Learning, three years and two years respectively after having qualified for the Degree of M. Litt., or M.O.L., or Ph. D., as the case may be.

Application and thesis.

2. The candidate shall state in his application the special subject upon a knowledge of which he bases his qualification for the Doctorate. Such subject shall be one which relates to the main branch of knowledge chosen for the preliminary Degree. If the thesis submitted has formed in part the basis for the award of a previous research degree, the candidate shall clearly set forth in a preface or written statement the portion or portions upon which has been based the award of the previous degree. He shall submit with his application four copies of his thesis, which shall ordinarily be in the form of published work, or published papers or books, that contain original contribution to the advancement of knowledge.

Note:—A thesis must be on one main theme, and no candidate can submit as a thesis a series of unconnected papers. A series of connected papers can be submitted provided they form one connected theme; and additional papers can be submitted in support of the main thesis only on the understanding that the candidate indicates in the preface the main work, or memoir, or thesis upon which he bases his application.

Declaration.

3. The thesis shall be accompanied by a declaration signed by the candidate that it has been composed by himself independently, and a certificate that the thesis has not previously

formed the basis for the award of any Degree, other than a Master's Degree or Ph. D. Degree, Diploma, Associateship, Fellowship or other similar title. If the thesis has not already been published, it shall be published by the candidate in such manner as the Syndicate shall approve.

Preface and notes.

4. The candidate shall indicate generally in a preface to his thesis, and specially in notes, the sources from which his information is taken, and the extent to which he has availed himself of the work of others; he shall also state in what respect his investigations appear to him to tend to the advancement of knowledge or otherwise form a valuable contribution to the literature of the subject dealt with.

Date for submission of application and thesis.

5. The application and the thesis must be forwarded with the prescribed fee*, so as to reach the Registrar on any day in the month of January or August, and after the lapse of the period mentioned in Regulation 1 *supra*.

Additional papers.

6. The candidate may, with the thesis, forward printed copies of any orginal contribution or contributions to the knowledge of his subject or of any cognate subject which may have been published by him independently or conjointly and upon which he relies in support of his candidature.

Evaluation of thesis.

7. The thesis, together with any other contributions and papers submitted, shall be referred by the Syndicate, for report, to a Board of three Examiners; at the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination; provided, however, it shall be competent for the Syndicate, in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in India, should the first mentioned Board of Examiners consider this necessary prior to coming to a decision. After receipt from the Board or Boards of the report on the thesis and on the oral examination, if any, the Syndicate may decide whether the candidate has qualified for the Degree or not :

* The fee prescribed for applying for the D.Litt. Degree is Rs. 250/-.

provided that it shall be competent for the Board of Examiners, if a candidate fails to reach the standard for the D. Litt. Degree, to recommend him for the Degree of Ph. D.

The decision of the Syndicate shall be published in the *Fort St. George Gazette.*

Number of chances.

8. A candidate shall not be permitted to submit a thesis for the Degree on more than two occasions; provided, however, it shall be competent for the Syndicate, after having taken into consideration the remarks of the Board of Examiners, to permit a candidate to submit a thesis on a third occasion.

Exception.

9. The Syndicate may, in exceptional circumstances, on the record of approved work already published and assessed by an independent Committee appointed by the Syndicate, permit a Degree holder in the Faculty of Arts, Teaching, Fine Arts and Oriental Learning of this University to supplicate for the highest Degree (D.Litt.) of this University without any preliminary Research Degree qualification to his credit, provided that 7 years have elapsed from the date of taking his first Degree.

CHAPTER XLIX.

Degree of Bachelor of Science (Pass).

Admission to B.Sc. Degree Examination—conditions of.

1. Candidates for the B. Sc. Degree Examination shall be required to have passed the Intermediate Examination in Arts and Science of this University, and to have satisfied the requirements under (i) of (c) Part III of Regulation 3 of the Chapter *re* the Intermediate Examination in Arts and Science as prescribed, or an examination accepted by the Syndicate as equivalent thereto under conditions, if any, prescribed and have subsequently undergone a prescribed course of study in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

2. The course for the B.Sc. Degree shall comprise the following subjects, according to syllabuses to be prescribed from time to time.

Part I—Language Course.

The course shall last for a period of one academic year.

Course of Study—Part I.

Any one of the following languages, at the option of the candidate :—

(i) English			
(ii) Classical		Sanskrit. Greek. Latin.	Arabic. Persian. Hebrew. Syriac.
(iii) Modern	(a) Foreign	French.	German.
	(b) Indian	Tamil. Telugu. Kannada. Malayalam. Urdu. Marathi.	Oriya. Hindi. Bengali. Burmese. Sinhalese.

English.—The course shall be: (1) Composition on matter supplied by books set for perusal; and (2) the study in detail of certain prescribed books in Modern Prose.

Indian Languages.—The course shall be: (1) Translation from the selected language into English and *vice versa* and (2) Composition on matter supplied by books set for non-detailed study.

Other Languages.—The course shall be : (1) Translation from the selected language into English and *vice versa* ; and (2) Prescribed text-books.

Part II.

Course of Study —Part II— Optional subjects. The course shall last for a period of two academic years.

Any three of the following branches of knowledge, one of which shall be taken as the main subject and the other two as subsidiary subjects :—

Mathematics.

*Statistics.

Physics.

Chemistry.

Botany.

Zoology.

Geology.

Physiology.

Mechanical Engineering.

Electrical Engineering.

Principles of Surveying, Preliminary Prospecting and Ore Assaying.

Anthropology.

*If Statistics is taken as a main subject, Mathematics should be one of the subsidiary subjects.

Provided that Mechanical Engineering and Electrical Engineering shall be taken only as subsidiary subjects and with Physics as the main subject :

Provided, however, that 'Principles of Surveying, Preliminary Prospecting and Ore Assaying' shall be taken only as a subsidiary subject with Geology as the main subject by those who have taken Mathematics, Physics and Chemistry under Part III of the Intermediate Examination of this University or the corresponding subjects of an examination of some other University accepted by the Syndicate as equivalent thereto :

Provided, however, that Anthropology shall be taken only as a subsidiary subject and with Botany, Zoology or Geology as the main subject;

or Home Science;

provided, however, that only those who have taken Chemistry, either Natural Science or Physics, and one other subject under Part III of the Intermediate Examination of this University or the corresponding subjects of an examination of some other University accepted by the Syndicate as equivalent thereto, shall be permitted to take *Home Science* under Part II of the course.

Any candidate, who is a member of the Madras University Officers' Training Corps, and has passed Military Science—Certificate 'A', shall have the option of taking Military Science—Certificate 'B'—in place of one of the subsdiary subjects or as an additional subject under Part II (for syllabus *vide* **Appendix V**).

Candidates offering Military Science as an additional subject shall be deemed to have passed the examination in the Subsidiary Subjects if they pass in one of the two subsidiary subjects and in Military Science.

NOTE.—Candidates desirous of proceeding to a Professional or Honours Degree Course shall satisfy the requirements laid down for admission to these courses, and may take Military Science—Certificate 'B'—as an additional subject.

The course of study in the main subjects (*see* Regulation 3 *infra* for scheme of examination) shall be according to syllabuses to be prescribed from time to time (for syllabuses *vide* **Appendix V**).

The course of studies in the several subjects for the subsidiary standard shall be the same as for the B.A. Degree Examination.

On the first day of the practical examination in the main subject candidates must submit the laboratory notebooks containing the drawings and other records relating to all the practical work performed by them during the period of study for the examination duly certified by the Professor or Lecturer as a *bona fide* record of work done by the candidates.

Candidates for examination in Botany shall submit in addition to their laboratory note-books their collection of plants and candidates for examination in Geology shall submit their field notes in addition to their geological collections.

Scheme of Examination—Part I.

3. The scheme of examination shall be as follows :—

Part I—Language.

English.—The examination shall consist of two papers :—

		Hours.	Marks.
1. English Prose	...	3	100
2. English Composition	...	3	100
	Total ...		200

Classical and Modern (Foreign) Langugaes.—The examination shall consist of two papers :—

		Hours.	Marks.
1. Translation	...	3	100
2. Prescribed text-books	...	3	100
	Total ...		200

Modern (Indian) Languages.—The examination shall consist of two papers :—

		Hours.	Marks.
1. Translation	...	3	100
2. Composition	...	3	100
	Total ...		200

Part II.

Mathematics—Main.

The examination shall be a written one and shall consist of the following papers :—

Scheme of Examination—Part II

	Hours.	Marks.
1. Algebra and Trigonometry.	3	100
2. Geometry ...	3	100
3. Calculus ...	3	100
4. Dynamics ...	3	100
Total ...		400

Mathematics—Subsidiary.

The examination shall be a written one and shall consist of the following papers :—

	Hours.	Marks.
1. Paper I (Algebra and Calculus)	3	75
2. Paper II (Trigonometry and Analytical Geometry) ...	3	75
Total ...		150

Statistics—Main.

The examination shall be both written and practical, and shall consist of the following papers: —

	Hours..	Marks.
1. Statistics—Paper I—Probability, distributions, interpolation, and curve fitting. Collection of data and diagrammatic representation. Analysis of Time Series ...	3	125
2. Statistics—Paper II—Measures of central tendency, dispersion, two variables and sampling. Analysis of variance	3	125
Practical Examination I ...	$2\frac{1}{2}$	60
Practical Examination II ...	$2\frac{1}{2}$	60
Practical Note-Book ...	...	30
Total ...		400

Statistics—Subsidiary.

The examination shall be both written and practical, and shall consist of the following:—

	Hours.	Marks.
Statistics—Statistical Method.	3	75
Practical Examination ...	3	75
Total ...		150

Physics—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Mechanics and General Properties of Matter ...	3	70
2. Heat and Sound ...	3	70
3. Light and Atomic Physics ...	3	70
4. Magnetism and Electricity ...	3	70
Practical Examination ...	6	100
Laboratory note-books ...	...	20
Total ...		400

Physics—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Hydrostatics, Properties of Matter and Heat ...	2	50
2. Light, Electricity and Magnetism.	2	50
Practical Examination ...	3	50
Total ...		150

Chemistry—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	General Chemistry ...	3	80
2.	Inorganic Chemistry ...	3	80
3.	Organic Chemistry ...	3	100
	Practical Examination (Organic)...	4	40
	Do. (Inorganic).	6	80
	Laboratory note-books ...	...	20
	Total ...		400

Chemistry—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	General and Inorganic Chemistry	3	60
2.	Organic Chemistry ...	2	40
	Practical Examination ...	3	50
	Total ...		150

Botany—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	Written Examination— Paper I—Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Histology	3	100
2.	Written Examination— Paper II—Morphology and Taxonomy of Angiosperms, Plant Physiology and General Principles	3	100
	Practical Examination I ...	3	70
	Do II ...	3	70
	Laboratory note-books ...	...	40
	Collection of plants ...	...	20
	Total ...		400

Botany—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	Written Examination— Paper I—Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Histology	2	50
2.	Written Examination— Paper II—Morphology and Taxonomy of Angiosperms. Plant Physiology and General Principles	2	50
	Practical Examination ...	3	50
	Total ...		150

Zoology—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	Written Examination— Paper I—(Invertebrata) ...	3	120
2.	Written Examination— Paper II—(Chordata) ...	3	120
	Practical Examination I ...	3	60
	Do. II ...	3	60
	Laboratory note-books ...	...	40
	Total ...		400

Zoology—Sudsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

		Hours.	Marks.
1.	Written Examination— Paper I—(Invertebrata) ...	2	50
2.	Written Examination— Paper II—(Chordata) ...	2	50
	Practical Examination ...	3	50
	Total ...		150

Geology—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Written Examination—		
Paper I—All divisions other than Mineralogy and Petrology	3	100
2. Written Examination—		
Paper II—Mineralogy and Petrology	3	100
Practical Examination—		
—Paper I	3	75
—Paper II	3	75
Laboratory note-books ...	...	25
Collection and field work notes	...	25
Total ...		400

Geology—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Written Examination—		
Paper I—All divisions other than Mineralogy and Petrology	2	50
2. Written Examination—		
Paper II—Mineralogy and Petrology	2	50
Practical Examination ...	3	50
Total ...		150

Physiology—Main.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Written Examination—Paper I ...	3	120
2. Do. ,, II ...	3	120
Practical Examination— , I ...	3	60
Do. ,, II ...	3	60
Laboratory note-books ...	...	40
	Total ...	400

Physiology—Subsidiary

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Written Examination—Paper I ...	2	50
Do, ,, II ...	2	50
2. Practical Examination ...	3	50
	Total ...	150

Mechanical Engineering—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Written Examination—Paper I—Machine Design ...	2	50
2. Written Examination—Paper II—Heat Engines, Steam Engines, Fuels and Boilers and Internal Combustion Engines ...	2	50
Practical Examination ...	3	50
	Total ...	150

Electrical Engineering—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Papers I—Direct current (excluding Storage Batteries and Illumination) ...	2	50
2. Paper II—Alternating Current and Storage Batteries and Illumination	2	50
Practical Examination ...	3	50
Total ...		150

Principles of Surveying, Preliminary Prospecting and Ore Assaying—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
1. Paper I—Principles of Surveying	2	50
2. Paper II—Preliminary Prospecting and Ore Assaying ...	2	50
Practical Examination ...	3	50
Total ...		150

Anthropology—Subsidiary.

The examination shall be both written and practical, and shall consist of the following papers :—

	Hours.	Marks.
Written Examination Paper I—(Physical Anthropology and Prehistory)	2	50
Written Examination Papers II—(Social Anthropology and Material Culture) ...	2	50
Practical Examination ...	3	50
Total		150

Home Science.

The examination shall be both written and practical in all subjects except Economics, where it shall be only written, and the scheme of examination shall be as follows :—

	Hours.	Marks.
I. Economics—		
(1) Household Economics ...	3	75
(2) (*a*) Rural Economics ... (*b*) Social Economics ...	3	100
II. Bacteriology and Hygiene ...	3	75
III. Physiology	3	75
IV. Nutrition ...	3	75
V. Applied Physical Science—		
(*a*) Chemistry (60) ... (*b*) Physics (40) ...	3	100
Practical Examination—		
Bacteriology and Hygiene ...	3	40
Physiology	3	40
Nutrition	3	40
Applied Physical Science ...	4	40
Practical Record Books—		
Bacteriology and Hygiene ...	...	10
Physiology	...	10
Nutrition	...	10
Applied Physical Science ...	...	10
	Total ...	700

Each candidate shall submit his Practical Record Books in Bacteriology and Hygiene, Physiology, Nutrition and Applied Physical Science containing the record of all his practical work performed during the period of his study. The records shall be countersigned by the Professors under whom the candidate has worked to certify them to be *bona fide* records of work performed by the candidate. The Professors shall present with the record books an assessment of their value. The record books shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination, and the final responsibility for allotment of marks on the practical record books shall rest entirely with the Examiners.

The scheme of examination in Military Science—Certificate 'B'—of the Madras University Officers' Training Corps shall be as laid down in the syllabus (*vide* **Appendix V**).

Eligibility for Degree—when.

4. No candidate shall be eligible for the Degree of Bachelor of Science until he has completed the course of study prescribed and has passed the examination in the subjects prescribed for the course in Regulations 2 and 3 *supra*.

Part I Examination may be taken in first year.

5. A candidate for the B. Sc. Degree Examination may present himself for Part I at the end of the first year of the course and thereafter may at his option present himself for the whole or for either Part at any one time.

Passing minimum.

6. A candidate shall be declared to have passed Part I of the examination if he obtains not less than 35 per cent of the total marks. A candidate taking *Home Science* shall be declared to have passed Part II of the examination if he obtains 30 per cent in each of the following divisions—(a) Economics, (b) Written Examination in the other subjects (Bacteriology and Hygiene, Physiology, Nutrition and Applied Physical Science), and (c) Practical Examination in Bacteriology and Hygiene, Physiology, Nutrition and Applied Physical Science; and 35 per cent of the total. In all the other subjects a candidate shall be declared to have passed Part II of the examination if he obtains not less than (1) 30 per cent in each of the two subsidiary subjects, (2) except in the case of Mathematics, 30 per cent in each of the divisions of the main subject (*a*) written examination, and (*b*) practical examination; (3) 35 per cent in the total for the main subject and (4) 35 per cent of the grand total (main and subsidiary subjects). All the other candidates shall be deemed to have failed in the examination.

A candidate offering Military Science—Certificate 'B'—of the Madras University Officers' Training Corps either as a subsidiary subject or as an additional subject shall be required to sit for the examination conducted by the Army, and to secure a pass therein, according to the standard laid down by the Army from time to time :

Provided that until such time as provision is made for holding the examination for Certificate 'A' or 'B' twice yearly, it shall be open to a candidate who has gained pass marks in Certificate 'B' to claim credit as having already passed in the Certificate as a subject for the B.Sc. Degree Examination and to appear only in the remaining subjects for the B.Sc. Degree Examination at the next or any succeeding examination.

Candidates who fail to obtain a pass in Military Science —Certificate 'B'—and desire to complete the B.Sc. Degree Examination with another subsidiary subject under Part II in place of Military Science—Certificate 'B'—shall be permitted to do so without further attendance (theory and practical) in one of the subsidiary subjects, provided they pass the examination in accordance with the conditions prescribed in the Regulations.

Classification of successful candidates.

7. There shall be separate lists of the successful candidates in each part. Candidates obtaining not less than 60 per cent of the total marks in Part I shall be declared to have passed with distinction in the language taken under Part I.

In Part II, candidates who obtain not less than 60 per cent of the total marks shall be placed in the first class, those who obtain less than 60 per cent, but not less than 50 per cent of the total marks, shall be placed in the second class and all the other successful candidates shall be placed in the third class.

Candidates studying for (Hons.) may proceed for B.Sc.

8. Nothing in these Regulations shall prevent a candidate who has passed the B.A. (Honours) Preliminary Examination or Part I of the B.Sc. (Honours) Degree Examination of this University from appearing for Part II of the B.Sc. (Pass) Degree examination on the production of the prescribed certificates of attendance in the subjects under Part II, to qualify for the B.Sc. Degree. He shall be exempted from examination in Part I—Language—of the B.Sc. Degree Examination.

B.A. to proceed for B.Sc.

9. A candidate who has qualified for the B.A. Degree in Group (ii-a), or (ii-b) or (iii) under the Old Regulations or in Group (ii) under the New Regulations shall be permitted to appear for the B.Sc. Degree Examination after one year's course in a Constituent or an Affiliated College, provided

(*a*) he takes as his main subject for the examination a Science subject different from the main and subsidiary subjects taken by him for the B.A. Degree Examination, in which case he shall be exempted from examination in the subsidiary subjects, and the percentages of marks secured by him in the B.A. Degree Examination in the main and subsidiary subjects shall be taken as the percentages of his marks in the two subsidiary subjects;

or

(*b*) he takes as his main subject for the examination the subsidiary subject which he took for the B.A. Degree Examination, in which case he shall be required to offer as a subsidiary subject a Science subject other than his main subject for the B.A. Degree Examination, and shall be exempted from examination in a second subsidiary subject, and the percentage of marks secured by him in the B.A. Degree Examination in the main subject shall be taken as the percentage of his marks in the second subsidiary subject.

Candidates coming under this Regulation shall be exempted from examination in Part I—Language.

10. A candidate who has qualified for the B.A. Degree in Mathematics under Group (i) Old Regulations or under Group (i-a) or (i-b) New Regulations or the B.A. (Honours) Degree in Branch I-A—Mathematics, shall be permitted to appear for the B. Sc. Degree Examination after one year's course in a Constituent or an Affiliated College, provided he takes for his course two subjects other than Mathematics, one of which shall be his main subject and the other his subsidiary subject (other than Mathematics).

He shall be exempted from examination in Part I—English, and in Mathematics as a subsidiary subject, and shall be credited with the percentage of marks secured by him in the subject in the B.A. or B.A. (Honours) Degree Examination.

11. A candidate who has qualified for the B.A. Degree in a Group other than any of those specified in Regulations 9 and 10 *supra* shall be permitted to appear for the B.Sc. Degree Examination after a two years' course in a Constituent or an Affiliated College; he shall be exempted from examination in Part I—Language.

A B.Sc. may qualify in another subject.

12. A candidate who has qualified for the B.Sc. Degree of this University shall be permitted to reappear for the B.Sc. Degree Examination with a view to qualifying for the Degree in an additional subject after one year's course in a Constituent or an Affiliated College, provided that

either

(*a*) he takes as his main subject for the examination a Science subject different from the main and subsidiary subjects taken by him for the previous B.Sc. Degree Examination, in which case he shall be exempted from examination in the subsidiary subjects;

or

(*b*) if he takes as his main subject for the examination one of the subsidiary subjects which he took for the B.Sc. Degree Examination on the previous occasion and offers a new subsidiary subject, different from those (main or subsidiary) taken previously for the B.Sc. Degree Examination, he shall be exempted from examination in the second subsidiary subject.

He shall also be exempted from examination in Part I—Language.

A candidate coming under the provisions of sub-paragraph (*a*) of this Regulation shall be declared to have passed the examination if he obtains not less than 35 per cent of the marks in the main subject and not less than 30 per cent in each of the divisions in the main subject.

A candidate coming under the provisions of sub-paragraph (*b*) of this Regulation shall be declared to have passed the

examination if he obtains not less than (1) 30 per cent in the new subsidiary subject, (2) 30 per cent in each of the divisions in the main subject, (3) 35 per cent of the total marks in the main subject; and (4) 35 per cent of the grand total (main and new subsidiary subjects).

Such candidates under the above Regulation shall not be admitted at a Convocation a second time, but special Post-Graduate Certificates setting forth the further subject or subjects passed by them and the dates of such examination shall be given to them.

Successful candidates under the above Regulation shall be placed in a separate list. They shall not be eligible for prizes or medals awarded by the University.

13. A candidate who has qualified for the B.A. or B.Sc. Degree of this University with Physics, Chemistry or Physiology as Main or Subsidiary subject and desires to qualify further for the B.Sc. Degree with *Home Science* under Part II shall not, however, be required to produce the prescribed certificates or to pass in the particular subject or subjects in which he has already qualified for the B.A. or B.Sc. Degree.

It shall, however, be competent for the Syndicate to permit a candidate who has qualifed for the B.Sc. Degree of this University with any one of the subjects Chemistry, Physiology and Physics as Main and the other two as Subsidiary subjects, to appear for the B.Sc. Degree Examination with *Home Science* under Part II after one year's course in a Constituent or an Affiliated College. He shall not be required to produce the prescribed certificates or to pass in the above three subjects.

He shall be exempted from examination in Part I—Language.

Such a candidate shall, however, pay the prescribed fee for the whole Part.

He shall not be admitted at a Convocation a second time, but a special Post-Graduate Certificate setting forth the further subject or subjects passed by him and the date of such examination shall be given to him.

Successful candidates under the above Regulation shall be placed in a separate list. They shall not be eligible for prizes or medals awarded by the University.

CHAPTER L.

Degree of Bachelor of Science (Honours).

Conditions—admission to examination.

1. Candidates for the examination of Bachelor of Science (Honours) Degree shall be required :

either

A

(1) to have passed the Intermediate Examination in Arts and Science of this University and to have satisfied the requirements under (i) of (c) Part III of Regulation 3 of the Chapter *re* Intermediate Examination in Arts and Science or an examination accepted by the Syndicate as equivalent thereto ;

and (2) to have undergone subsequently a further course of study in a Constituent or an Affiliated College for a period of not less than three academic years or nine terms ;

or

B

(1) to have qualified for the Degree of Bachelor of Science (B.Sc.) or for the Degree of Bachelor of Arts (B.A.) as prescribed in this University or to have passed a Degree examination of some other University accepted by the Syndicate as equivalent thereto ;

and (2) to have undergone subsequently a further course of study in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

Course of Study.

2. The course shall comprise the study of—

PART I.

English or French or German.

PART II.

Optional Branch.

I-A. Mathematics

I-B. Statistics

or

One of the following as Main subject—

II. Physics.

III. Chemistry.

IV. Botany.
V. Zoology.
VI. Geology.
VII. Physiology,

and any one of the following (other than the subject taken as the Main subject) as a Subsidiary subject:—

1. Mathematics.
2. Physics.
3. Chemistry.
4. Botany.
5. Zoology.
6. Geology.
7. Physiology.

Provided, however, that candidates offering Chemistry as the Main subject shall take only Physics as the Subsidiary subject.

Part I.—English or French or German.—The course of study shall be the same as for English or French or German under Part I of the B.Sc. Degree course.

Part II.—Optional Branch—Main subject.

The course of study in the Main subjects shall be as detailed below:—

I-A.—Mathematics.

A candidate shall be required to have a sound knowledge of—

(a) Pure Mathematics—

(1) Pure Geometry including Projective Geometry.
(2) Algebra and Theory of Equations.
(3) Plane Trigonometry.
(4) Differential and Integral Calculus, including Reimann Integration, Cauchy's Theorem on Contour Integration and Fourier's Series.
(5) Elementary Differential Equations.
(6) Co-ordinate Geometry of two Dimensions.
(7) Solid Geometry—The Line, Plane, Sphere and Surfaces of the Second Degree.

(b) Applied Mathematics—

(1) Statics, excluding the Theory of Potentials.
(2) Dynamics of a Particle.

(3) Dynamics of a Rigid Body—Motion in two Dimensions.

(4) Hydrostatics.

(5) Astronomy, General and Elementary Spherical.

(c) Two of the following subjects at the option of the candidate :—

(1) Dynamics	...	A Special Subject.*
(2) Astronomy	...	Do.
(3) The Potentials	...	Do.
(4) Elasticity	...	Do.
(5) Hydro-dynamics and Sound	...	Do.
(6) Heat	...	Do.

A candidate shall give notice, through his college, a year before the date of the examination, of the particular subjects he proposes to take.

I-B.—Statistics.

A candidate shall be required to have a sound knowledge of :—

(a) Pure Mathematics [Same as for B.Sc. (Honours) Branch I-A—Mathematics.]

(b) General Algebra.

(c) Statistical Methods including theory of probability and calculus of finite differences.—

1. Statistics I. Probability, distributions and curve fitting.

2. Statistics II. Interpolation, variation and correlation and analysis of time series.

3. Statistics III. Sampling, analysis of variance, estimation and testing of hypothesis.

II. Physics.

A candidate shall be required to have a sound knowledge of the experimental side of the following subjects, and also such knowledge of the theoretical side of each as

* For the Special Subjects prescribed under each head, please see APPENDIX VI.

may be obtained by the applications of the Calculus, and simple differential equations :—

(1) Properties of Matter.
(2) Heat.
(3) Geometrical and Physical Optics.
(4) Sound.
(5) Magnetism and Electricity.
(6) Modern Physics.

A candidate shall also be required to have a special knowledge, experimental and theoretical, of *one* of the following subjects, the choice of the subject being left to the option of the candidate :—

(1) The Kinetic Theory of Gases and its applications
(2) Radio-activity.
(3) Radiation—A. Electrical Waves, Wireless Telegraphy and Telephony.
(4) Radiation—B. X-Rays and their applications.
(5) Spectroscopy and its applications.

or

A Second Paper in Modern Physics as defined by a syllabus.

A candidate shall give notice, through his college, a year before the date of the examination, of the particular subject he proposes to take.

III. Chemistry.

A candidate shall be required to show that he has made a more comprehensive study than for the B.Sc. Degree of the four main divisions of the subject:—

(1) General Theoretical Chemistry including its historical develpoment.
(2) Physical Chemistry.
(3) Inorganic Chemistry.
(4) Organic Chemistry.

A candidate shall also be required to have a special knowledge, experimental and theoretical, of *one* of the following subjects, the choice of subject being left to the option of the candidate:—

(1) Electro-Chemistry.
(2) Mineralogy and Elementary Crystallography.

(3) Elementary Crystallography and Stereo-Chemistry.
(4) Metallurgical Chemistry.
(5) Tinctorial Chemistry.
(6) Biochemistry.
(7) Chemistry of the Rare Earths and Radio Elements.

A candidate shall give notice, through his college, a year before the date of the examination of the particular subject he proposes to take.

A candidate shall be required to be practically familiar with (*a*) The ordinary methods of qualitative inorganic analysis, (*b*) The chief volumetric and gravimetric methods of analysis of inorganic compounds including simple gas analysis, (*c*) The methods of detection and estimation of the more important organic radicals and the preparations of pure organic compounds, (*d*) The estimation of carbon, hydrogen, nitrogen, sulphur and halogens in organic compounds, (*e*) The more important methods of physico-chemical measurements.

IV. Botany.

A candidate shall be required to have made a comprehensive study of the following branches of Botany :—

(1) Morphology and Taxonomy of—
 (*a*) Thallophytes.
 (*b*) Bryophytes.
 (*c*) Pteridophytes.
 (*d*) Gymnosperms.
 (*e*) Angiosperms.
(2) Ecological and Geographical Distribution of Phanerogams with special reference to South India.
(3) Fungi, specially with reference to their economic importance.
(4) Plant Physiology.
(5) Plant Histology.
(6) Physiological Anatomy.
(7) Palæobotany.
(8) Cytology and Genetics.
(9) Principles of Evolution and Heredity.
(10) The Chief Economic Plant Products.

Each candidate shall also be required to present as a special subject a topic chosen from one of the sections mentioned above. He must give notice, through his college, a year before the examination, of the particular subject he proposes to present.

V. *Zoology.*

Theory :—The course shall be the same as for the B.Sc. Pass (Zoology Main) but treated more fully. In addition, candidates shall be expected to have made a special study of any one particular group of animals or any one of the following branches of Zoology :—

Cytology, Genetics, Histology, Invertebrate Embryology (comprising the study of the following groups—*Porifera*, *Annelida*, *Mollusca*, *Arthropoda* and *Echinodermata*), Animal Ecology, Marine Zoology, Entomology, Parasitology, Palæontology and Endocrinology.

Practical.—The practical work will not be confined to the types enumerated for the B.Sc. (Pass). Candidates may be required to dissect any of the more common type of animals included in the groups prescribed, to identify specimens with the aid of manuals, to report on zoological collections, to make microscopic preparations, to cut sections with the microtome and to show their practical acquaintance with the methods employed in studying the embryology of the chick.

Each candidate shall give notice, through his college, a year before the date of the examination, of the special subject he proposes to present.

VI. *Geology.*

The course shall be the same as for the B.Sc. Pass (Geology Main) but treated more fully with the following additions:—

Mineralogy and Crystallography.—The thirty-two types of crystal symmetry, theories of crystal structure, systems of crystal notation, zonal characters, crystal projections and drawings; twin crystals, grouping and irregularities of crystals, parting planes, percussion figures, etched

figures, etc., use of the Reflecting Goniometer. General mathematical relations of crystals and measurement of crystal angles.

Description and determination of minerals by chemical and physical tests.

The chief ores and minerals of commercial value; their distribution, occurrence, with special reference to Indian examples and their use; nature and structure of chief types of ore deposits.

Petrology.—The principles underlying the genesis and classification of rocks. Mechanical separation of rock constituents; examination of sands; methods of the preparation of rock sections for the microscope. Optical properties of crystals. Practical determination of the optical characters of the chief rock-forming minerals with the petrological microscope, including the use of convergent light. Determination of the nature and history of rocks by means of microscope.

Structural and Field Geology.—The relationships of structure of relief, drainage and economics. The composition and structure of rock masses as influencing scenery. Weathering and formation of soils. Each candidate is required to map and describe from his own personal observations the geology of an area selected by himself with the approval of the Professor.

Stratigraphy and Palæntology.—The geological formations with their lithology, sub-divisional fossils, correlation and economics. The physical geography and vulcanicity of the different periods; general distribution of existing faunas and floras and their relation to those of former geological periods; morphological characters of the more important types of fossils; drawing of fossils; Geology of India brought up to date.

Candidates shall also be required to present a special subject out of the subjects prescribed. A candidate shall give notice, through his college, a year before the date of the examination, of the particular subject he proposes to take.

VII. *Physiology.*

The course shall be the same as for B.Sc. Pass (Physiology Main), but candidates shall be required to show a more comprehensive knowledge of the subject than required for B.Sc. (Pass) and shall be required to have made a special study of one of the following branches of the subject:—

1. Blood and circulation.
2. Respiration.
3. Nutrition.
4. Neurology.
5. The sense organs.
6. Endocrinology.
7. Comparative Physiology.

Each candidate shall give notice, through the college, a year before the date of the examination, of the special branch of the subject he proposes to present.

Subsidiary Subjects.

The course of study in the subsidiary subjects under Part II shall be the same as for Part II of the B.Sc. Degree course.

3. The scheme of examination shall be as follows:—

PART I—ENGLISH OR FRENCH OR GERMAN.

Scheme of Examination.

The examination shall be the same as for the B.Sc. (Pass) Degree, Part I, in the languages, *viz.*, English, French or German, and shall consist of two papers, as follows:—

English

		Hours.	*Marks.*
Prose	...	3	100
Composition	...	3	100
		Total ...	200

French or German.

		Hours.	*Marks.*
Translation	...	3	100
Prescribed text-books	...	3	100
		Total ...	200

PART II—OPTIONAL BRANCH.

I-A. *Mathematics.*

Scheme of Examination. The examination shall be a written one and shall consist of the following papers :—

				Hours.	Marks.
*1.	Pure Mathematics	I	...	3	175
*2.	Do.	II	...	3	175
*3.	Do.	III	...	3	175
4.	Applied Mathematics	I	...	3	175
5.	Do.	II	...	3	175
6.	Do.	III	...	3	175
7.	Optional subject	I	...	3	175
8.	Do.	II	...	3	175
				Total ...	1,400

The papers shall contain questions on the principles developed in the ordinary treatment of the subject as well as exercises of moderate difficulty arising therefrom.

I-B. *Statistics.*

The examination shall be both written and practical, and the scheme of examination shall be as follows :—

				Hours.	Marks.
*1.	Pure Mathematics	I	...	3	175
*2.	Do.	II	...	3	175
*3.	Do.	III	...	3	175
4.	General Algebra		...	3	175
5.	Statistics I		...	3	175
6.	Do. II		...	3	175
7.	Do. III		...	3	175
	Practical Examination		...	3	150
	Record Note-books		...		25
				Total ...	1,400

Each candidate shall submit his note-book containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the Professor under whom the candidate

*These three papers are common to Branches I-A and I-B.

has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted at the time of the practical examination to the Examiners engaged in conducting the examination.

II. Physics.

Scheme of Examination.

The examination shall be both written and practical, and the scheme of examination shall be as follows:—

			Hours.	*Marks.*
1.	Properties of Matter	...	3	125
2.	Heat and Sound	...	3	125
3.	Sound and Light	...	3	125
4.	Magnetism and Electricity	...	3	125
5.	Modern Physics I	...	3	125
6.	Optional subject or Modern Physics II	...	3	125
7.	Practical Examinations—			
	First Day —Properties of Matter ...	...	3	100
	Second Day—Heat and Sound ...	...	3	100
	Third Day—Sound and Light ...	...	3	100
	Fourth Day—Magnetism and Electricity	...	3	100
	Laboratory Record Books ...			100
	Total—Main Subject	...		1,250
	Subsidiary Subject ...	...		150
		Total ...		1,400

At the Practical Examination candidates will be expected to make physical measurements and observations of the more advanced kind.

Each candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the Professor or Professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination.

III. Chemistry.

Scheme of Examination.

The examination shall be both written and practical, and the scheme of examination shall be as follows :—

			Hours.	Marks.
1.	General Chemistry	...	3	150
2.	Inorganic Chemistry	...	3	150
3.	Physical Chemistry	...	3	150
4.	Organic Chemistry	...	3	150
5.	Special (Optional) subject	...	3	100
				700

Practical Examinations :—

1.	Physical Chemistry	...	6	100
2.	Inorganic Qualitative Analysis	...	6	75
3.	Inorganic Quantitative Analysis	...	6	125
4.	Organic Chemistry	...	6	150
				450
	Laboratory Records	...	...	100
	Total—Main Subject	...	...	1,250
	Subsidiary Subject	...	...	150
	Total		...	1,400

Each candidate shall submit his laboratory note-books containing the record of all his practical work performed during the period of study for the examination. The record shall be countersigned by the Professor or Professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination.

IV. *Botany.*

Scheme of Examination.

The examination shall be both written and practical, and the scheme of examination shall be as follows :—

			Hours.	*Marks.*
1.	Algæ, Fungi, etc.		3	150
2.	Pteridophytes		3	150
3.	Histology		3	150
4.	Systematic Botany		3	150
5.	Special subject		3	150
	Practical examinations—(4 practicals of 3 hours each and 100 marks for each examination)			400
	Laboratory note-books and collections			100
	Total—Main Subject			1,250
	Subsidiary Subject			150
	Total ...			1,400

The practical examination may include—

(1) The identification of Indian plants with the help of a flora or any other books allowed by the Examiners.

(2) The preparation and correct interpretation of microscopic sections of plants.

(3) The examination of a diseased or abnormal plant.

(4) Practical Physiology and *viva voce* questions.

Each candidate shall submit a collection of named flowering plants, collected and preserved by himself. There may be also plants of any of the other main divisions of the vegetable kingdom. The record shall be countersigned by the Professor or Professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination.

V. *Zoology.*

Scheme of Examination. The examination shall be both written and practical, and the scheme of examination shall be as follows :—

		Hours.	Marks.
1.	Invertebrata	3	150
2.	Chordata*	3	150
3.	Vertebrate Embryology; Palæontology	3	150
4.	Genetics, Cytology and General Principles	3	150
5.	Special subject	3	150
	Practical examinations—(4 practicals of 3 hours each and 100 marks for each examination) ...		400
	Laboratory note-books		100
	Total—Main Subject		1,250
	Subsidiary Subject		150
	Total ...		1,400

Candidates may also be examined by *viva voce* questions.

Each candidate shall submit his laboratory note-books containing the record of all practical work performed during the period of his study. In addition to his laboratory note-books, a candidate shall submit 25 slides of serial sections. The record shall be countersigned by the Professor or Professors under whom the candidate has worked to certify it to be a *bona fide* record of work

*Including Vertebrate Fauna of South India.

performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination.

VI. Geology.

Scheme of Examination.

The examination shall be both written and practical, and the scheme of examination shall be as follows :—

		Hours.	*Marks.*
1.	General Geology and Structural Geology	3	150
2.	Stratigraphy and Palæontology	3	150
3.	Mineralogy	3	150
4.	Petrology	3	150
5.	Special subject	3	150
	Practical examination (4 practicals of 3 hours each and 100 marks for each examination)	...	400
	Laboratory note-books and other records	...	100
	Total—Main Subject ...	...	1,250
	Subsidiary Subject	...	150
	Total	...	1,400

Viva voce questions may be asked.

Each candidate shall submit his laboratory note-books and other records relating to practical work and specimens. The record shall be countersigned by the Professor or Professors under whom the candidate has worked to certify it to be a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the examination.

VII. *Physiology.*

Scheme of Examination.

The examination shall be both written and practical, and the scheme of examination shall be as follows :—

		Hours.	Marks.
1. Written Examination—I (General Physiology)	...	3	150
2. Written Examination—II (Human Physiology)	...	3	150
3. Written Examination—III (Human Physiology)	...	3	150
4. Written Examination—IV (Biochemistry)	...	3	150
5. Written Examination—V (Special subject)	...	3	150
Practical Examinations—4 (each of 3 hours and 100 marks for each examination)	...	...	400
Laboratory Records ...	...	...	100
Total—Main Subject	...	...	1,250
Subsidiary Subject ...	...	...	150
Total		...	1,400

Candidates may also be examined by *viva voce* questions.

Each candidate shall submit his laboratory note-books which shall contain the record of all the practical work performed by him during the period of study for the examination. The record shall be countersigned by the Professor or Professors under whom the candidate has worked, who should certify that it is a *bona fide* record of work performed by the candidate. It shall be submitted on the first day of the practical examination to the Examiners engaged in conducting the practical examination.

Subsidiary Subjects.

Scheme of Examination.

The examinations in the subsidiary subjects for the B. Sc. (Honours) Degree shall be the same as for the subsidiary subjects for the B. Sc. (Pass) Degree. The marks allotted to each subsidiary subject shall be 150.

4. No candidate shall be eligible for the B. Sc. (Honours) Degree until he has passed the examination in Part I—English or French or German (unless otherwise exempted) and in one of the seven branches of knowledge as prescribed.

Admission to Part II Examination.

5. No candidate shall be admitted to the examination in Part I—English or French or German—unless he has passed the Intermediate Examination in Arts and Science in this University or an examination recognised by the Syndicate as equivalent thereto, and has undergone the prescribed course for one academic year. The examination in Part I—English or French or German—may be taken at the end of the first year of the Honours Degree Course.

Admission to Part II Examination.

6. No candidate shall be admitted to the Final Examination (Part II—Main Subject) unless he has passed in Part I—English or French or German.

7. A candidate for the B. Sc. (Honours) Degree may appear for the examination in the subsidiary subject or subjects at the end of the second year of the course.

Submission of practical records.

8. On the first day of the practical examination in the main subject every candidate shall submit his laboratory note-books containing the drawings and other records relating to his practical work performed during the period of study for the examination. The record shall be countersigned by the Professor or Professors under whom the candidate has worked and shall be certified to be a *bona fide* record of work performed by the candidate.

Time limit to appear for Final Examination.

9. A candidate for the B.Sc. (Honours) Degree shall appear for the Final Examination in Part II—

(1) not later than the end of the fourth year after commencing the Honours Degree course in a college; and (2) in the case of Bachelors of Science or Bachelors of Arts proceeding to the B.Sc. (Honours) Degree Examination, not later than three years after commencing the B.Sc. (Honours) Degree course in a college.

Final Examination to be taken only once.

10. No candidate shall be permitted to undergo the Final Examination in Part II for the Honours more than once.

For purposes of this Regulation, the Final Examination shall mean the examination in the main subject.

A candidate for the Final Examination shall be permitted to withdraw from the examination, provided he has not sat for the last paper in the written examination or the last practical examination in the subject; and provided he has given notice of withdrawal to the Registrar, within three clear days from the date of the last paper (theory or practical) which he answered. He shall be permitted to appear again for the examination in the main subject in the following year without producing any additional certificate of attendance.

Nothing in this Regulation shall apply to the examination in the subsidiary subject.

NOTE:—A candidate shall be deemed to have sat for the last paper if he has entered the hall in which the examination for the last paper is held.

Passing minimum.

11. A candidate shall be declared to have passed the B.Sc. (Honours) Degree Examination if he has obtained not less than—

(1) 40 per cent of the total marks in Part I—English or French or German—for the two papers taken together, and

(2) 40 per cent of the total marks in Part II and 30 per cent of the marks in each division of Part II.

All the other candidates shall be deemed to have failed in the examination.

Divisions of the subjects for examination.

The divisions shall be as follows:—

I-A. Mathematics.—(*a*) Pure Mathematics, (*b*) Applied Mathematics, (*c*) Optional subjects.

I-B. Statistics.—(*a*) Pure Mathematics and General Algebra, (*b*) Statistics I, II and III, (*c*) Practical.

II. Physics and III. Chemistry.—(*a*) Written examination in the main subject, (*a*) Practical examination and Laboratory note-books in the main subject, (*c*) Subsidiary subject.

IV. Botany and VI. Geology.—(*a*) Written examination in the main subject, (*b*) Practical examination and Laboratory note-books in the main subject, (*c*) Subsidiary subject.

V. Zoology and VII. Physiology.—(*a*) Written examination in the main subject (Papers I to IV), (*b*) Written examination in the main subject (Paper V—Special subject), (*c*) Practical examination in the main subject and Laboratory records, (*d*) Subsidiary subject.

12. Candidates obtaining not less than 60 per cent of the marks in Part I—English or French or German—shall be declared to have passed with distinction.

Classification of successful candidates.

13. Successful candidates in the examination shall be ranked in the order of proficiency as determined by the total marks obtained by each and shall be arranged in three classes:—

Candidates who obtain not less than 60 per cent of the aggregate marks shall be placed in the first class; those who obtain less then 60 per cent but not less than 50 per cent shall be placed in the second class; and all the other successful candidates shall be placed in the third class.

Candidates for B.Sc. (Hons.)—when recommended for B.Sc.

14. In the event of a candidate for the B.Sc. (Honours) Degree failing to satisfy the examiners in Part II of the examination he may be recommended by them for the B.Sc. Degree, provided that he obtains not less than $33\frac{1}{3}$ per cent of the total marks and not less than 25 per cent in each division of the examination in Part II.

Failed candidates may appear for B.Sc.

15. A candidate not already eligible for the B.Sc. Degree, who, having failed completely in the B.Sc. (Honours) Degree Examination, desires to appear for the B.Sc. Degree Examination, shall be allowed to do so subject to the provisions in Regulation 17 *infra* without the production of a further certificate of attendance in a Constituent or an Affiliated College in the subjects in which he has already appeared. He shall be exempted from re-appearance in Part I.

Withdrawn candidates from (Hons.) may appear for B.Sc.

16. A candidate not already eligible for the B.Sc. Degree, who, after being registered, presents himself for the B.Sc. (Honours) Degree Examination in any year, and withdraws from the same and is prevented, through illness or otherwise, from subsequently presenting himself for the examination within the period precribed under Regulation 9 (1) of this Chapter, shall be allowed to appear for the B.Sc. Degree Examination subject to the provisions in Regulation 17 *infra*, without the production of a further certificate of attendance in a Constituent or an Affiliated College. He shall be exempted from re-appearance in Part I.

17. A candidate appearing for the B.Sc. Degree Examination under Regulations 15 and 16 above, shall offer for the examination the same subjects (main and subsidiary) taken by him for the B.Sc. (Honours) Degree course and examination, provided that (*a*) a candidate shall be required to take a second subsidiary subject for the B.Sc. Degree Examination and shall produce a certificate of attendance and progress that he had undergone the prescribed course in the second subsidiary subject in a Constituent or an Affiliated College for a period of not less than one academic year; and (*b*) a candidate who had taken Mathematics as his main subject for the B.Sc. (Honours) Degree course shall be required to take two subsidiary subjects for the B.Sc. Degree Examination and shall produce a certificate of attendance and progress that he had undergone the prescribed course in the two subjects in a Constituent or an Affiliated College for a period of not less than one academic year.

18. A candidate who has passed the B.Sc. Degree Examination, shall be permitted to appear for the B.Sc. (Honours) Degree Examination after a further course of two years in a Constituent or an Affiliated College provided that the main subject offered for the B.Sc. (Honours) Degree Examination shall be the main subject in which he has already qualified for the B.Sc. Degree. He shall be exempted from examination in Part I and the examination in the subsidiary subject, and shall be credited with the percentage of marks, whichever is higher, obtained by the candidate in either of the two subjects taken by him for the B.Sc. Degree Examination, subject to the selection or restriction of the subsidiary subject under Regulation 2 of this Chapter. If the candidate has not taken the prescribed subsidiary subject, he shall be required to pass in the subsidiary subject after undergoing one year's course of study in the subject:

B.Sc.'s may appear for B.Sc. (Hons.)

provided, however, that candidates who have passed examinations of other Universities, recognized by the Syndicate as equivalent to the B.Sc. or B.A. Degree Examination of this University, and undergo the post-graduate course in this University shall appear for and pass in the examinations in the Main and Subsidiary subjects in this University; the examinations in the Subsidiary subject may be taken at the end of the first year of the post-graduate course.

19. A candidate who has qualified for the B.A. Degree in Group (i), (ii-a), (ii-b) or (iii) of the Old Regulations,* or in Group (i) or (ii) of the New Regulations shall be permitted to appear for the B.Sc. (Honours) Degree Examination, after a further course of two years in a Constituent or an Affiliated College, provided that the main subject offered for the B.Sc. (Honours) Degree Examination shall be the main subject in which he has already qualified for the B.A. Degree. He shall be exempted from examination in Part I, and the examination in the subsidiary subject and shall be credited with the percentage of marks obtained by

B.A.'s may appear for B.Sc. (Hons.)

* Old Regulations are those that were in force prior to 1930-31 and the New Regulations are those that came into force from the examinations of 1931.

him in the B.A. Degree Examination, if it is the one admissible under Regulation 2 of this Chapter. If the candidate has not taken the prescribed subsidiary subject, he shall be required to pass in the subsidiary subject after undergoing one year's course of study in the subject:

provided, however, that candidates who have passed examinations of other Universities, recognized by the Syndicate as equivalent to the B.Sc. or B.A. Degree Examination of this University, and undergo the post-graduate course in this University shall appear for and pass in the examinations in the Main and Subsidiary subjects in this University; the examinations in the Subsidiary subject may be taken at the end of the first year of the post-graduate course.

Time limit for post-graduate students.

20. A candidate proceeding to the B.Sc. (Honours) Degree Examination under Regulations 18 and 19 above shall be required to appear for the Final Examination not later than three years after commencing the Honours course in a college.

21. A Bachelor of Arts—other than those who have been awarded the B.A. Degree on the results of the B.A. (Honours) Degree Examination—who appeared for the B.A. (Honours) Degree Examination in Science subjects in March 1937, with a view to qualifying for the M.A. Degree, and failed therein, and desires to appear for the B.Sc. (Honours) Degree Examination shall be permitted to do so in any subsequent year, without the production of any additional certificates of attendance, in the same subjects in which he appeared for the B.A. (Honours) Degree Examination of 1937.

Hons. Graduates may appear in a different subject.

22. A candidate who has qualified for the Bachelor of Arts (Honours) Degree in a Science subject (under the Old Regulations) or for the Bachelor of Science (Honours) Degree of this University shall be permitted to appear again for the B.Sc. (Honours) Degree Examination in a different Branch of Science after undergoing the prescribed course of study in the new subject for two academic years in a Constituent or an Affiliated College of this University, provided that the

new Branch of Science has been studied by the candidate as a subsidiary subject in the previous Honours course. If the new subject is other than the subsidiary subject already studied by the candidate, he shall be permitted to appear again for the B.Sc. (Honours) Degree Examination only after undergoing the prescribed course of study in the new subject for three academic years in a Constituent or an Affiliated College of this University.

He shall be exempted from examination in the Subsidiary subject:

Provided, however, that in the case of candidates taking Chemistry as the Main subject, they shall be required to pass in Physics as the Subsidiary subject after undergoing one year's course of study in the subject, if they have not already passed in Physics as a Subsidiary subject.

A candidate coming under the provisions of this Regulation shall be declared to have passed the examination if he obtains not less than 40 per cent of the total marks in the new branch of science selected by him and not less than 30 per cent of the marks in each division of the subject.

Such candidates under the above Regulation shall not be admitted at a Convocation a second time, but special Post-Graduate Certificates setting forth the further subject or subjects passed by them and the dates of such examination shall be given to them.

Successful candidates under the above Regulation shall be placed in a separate list. They shall not be eligible for prizes or medals awarded by the University.

CHAPTER LI.

Degree of Master of Science (by Examination).

1. A candidate may present himself for the Degree of Master of Science (by examination) under the following conditions:—

Eligibility.

(i) He should have passed the B.Sc. Degree Examination in Honours or the B. A. (Honours) Degree Examination in a Science subject of this University in the main standard in the subject in which he pursues his study for the M. Sc. Degree Examination; and

(ii) have undergone a course of study extending over one academic year in an institution recognised by or affiliated to the University.

2. The course shall comprise the study of any one of the following subjects, according to a syllabus (*vide* **Appendix VII**), which has been taken as the main subject for the Honours:

Course of Study.

(i) Mathematics
(ii) Physics
(iii) Chemistry
(iv) Botany
(v) Zoology
(vi) Geology

3. The examination shall, in all subjects other than Mathematics, consist of two written papers and two practicals with a *viva voce*, and the scheme of marks shall be as follows :—

Scheme of Examination.

Written Paper I	...	150
Written Paper II	...	150
Practical I	...	150
Practical II	...	150
Viva voce examination	...	100
Total	...	700

Passing minimum.

4. A candidate shall be declared to have passed the M.Sc. Degree Examination if he obtains not less than 35 per cent of the total marks in the written papers and the practicals separately, and 40 per cent of the total marks. All the other candidates shall be deemed to have failed in the examination.

Classification of successful candidates.

5. Successful candidates in the examination shall be ranked in the order of proficiency as determined by the total marks obtained by each, and shall be arranged in two classes. Candidates who obtain not less than 60 per cent of the aggregate marks shall be placed in the first class. All the other successful candidates shall be placed in the second class.

Examination.

6. The examination shall be held once a year.

Additional attendance for failed candidates.

7. Candidates who are unsuccessful at the first appearance shall be required to put in attendance for one term before appearing for a subsequent examination.

CHAPTER LII.

Degree of Master of Science (M. Sc.)

[*Common to all Science Faculties (other than Veterinary Science) and Engineering.*]

Eligibility.

1. A candidate may present himself for the Degree of Master of Science (M.Sc.) under the following conditions:—

(*a*) *Faculty of Science*—(i) A Bachelor of Arts in a Science subject (including Groups i-a, i-b and i-c) of this University or a Bachelor of Science of this University, or of any other University recognised by the Syndicate as equivalent thereto, after two years of research under supervision and after registration.

(ii) A Bachelor of Arts (Honours) in a Science subject, or a Master of Arts in a Science subject, or a Bachelor of Science (Honours) of this University or of any other University recognised by the Syndicate as equivalent thereto, after one year's research under supervision and after registration.

(*b*) *Faculties of Engineering and Technology*—A Bachelor of Engineering or a Bachelor of Science in Technology, of this University, or of any other University recognised by the Syndicate as equivalent thereto, after one year's research under supervision and after registration.

(*c*) *Faculty of Agriculture*—A Bachelor of Science in Agriculture of this University, or of any other University recognised by the Syndicate as equivalent thereto, after one year's research under supervision and after registration, provided he had worked in a laboratory for one year prior to such registration :

provided that it shall be competent for the Syndicate to dispense with a strict compliance with the above Regulation in very special cases :

provided further that graduates of other Universities shall not be eligible to submit theses for the Degree unless they have resided for two years, subsequent to registration, within the University limits or area and have pursued a course of research in the University or a Constituent or an Affiliated College thereof recognised by the Syndicate for this purpose during this period.

Registration.

2. A candidate for the Degree shall apply to the Registrar, in the prescribed form together with the fee* laid down, so as to reach the Registrar on any day in the month of January or August each year, giving the following particulars :—

(*a*) his qualifications and attainments, and previous study and research, if any ;

(*b*) the special subject in which he intends to prosecute research The subject of research shall be one which relates to the main branch of knowledge chosen for the preliminary Degree [*i.e* the main, subject offered for the B.A., B. Sc., B.A. (Hons.) M. A., B. Sc. (Hons.), B.E., or B. Sc. (Tech.) and in the case of Agriculture, the subject shall come within the purview of one of the following branches :—

Agricultural Botany, or
Agricultural Chemistry, or
Agricultural Zoology, or
Plant Husbandry, or
Agricultural Economics] ;

and (*c*) the name of the Teacher of this University or the Teacher of an Institution recognised by or affiliated to this University under whose supervision and guidance he proposes to work and the name of the laboratory (except in the case of Mathematics and Statistics) or Institute or College where he proposes to conduct his research ; accompanied by the written consent of the Teacher agreeing to supervise his work, and in the case of a candidate proposing to do work in an Institution from the Head of the Institution permitting him to work.

* The fee prescribed for registration for the M. Sc. Degree is Rs. 50/-.

3. Every application shall be considered by the Syndicate; and, if approved, the candidate shall be registered as a candidate for the Degree.

Option.

4. Every candidate so registered shall have the option, subject to approval by the Syndicate, and definite recommendation of the supervisor concerned, to submit a thesis for the Degree of M.Sc. or Ph.D., provided he satisfies the conditions regarding the duration of supervised research in each case:

provided, however, as a temporary measure, it shall be competent for the Syndicate on the recommendation of the supervisor concerned, to permit such research students as had already been registered for the M. Sc. Degree prior to the introduction of these Regulations to apply for the Ph. D. Degree.

Approval of Institutions.

5. The Institutions for purposes of approval for research shall ordinarily be Departments of the University or Colleges affiliated to or recognised by the University up to the Honours standard in the Branch of Study or the Professional Colleges concerned. The Syndicate, however, may, in regard to First Grade Colleges, recognise particular Departments of Study, if it is satisfied both with regard to the laboratory facilities available and the qualifications of the person for supervision, such recognition being for a period of time and renewable subject to such conditions as the Syndicate may lay down. In regard to subjects for which research facilities are not available within the University, it shall be competent for the Syndicate to recognize, on individual merits, Research Institutes or Departments of an All-India character and the Teachers or Officers employed therein for purposes of enabling persons to pursue research in such Institutes or Departments with a view to qualifying for the M.Sc. Degree of this University.

Submission of thesis.

6. After the expiration of the period of post-graduate study and research, every candidate shall submit with his application for the Degree four copies of the thesis, printed or type-written, embodying the results of the research carried out by him, together with the prescribed fee.*

*The fee prescribed for applying for the M.Sc. Degree is Rs. 150/-.

The candidate shall also submit with his application and thesis a certificate from the Teacher, under whom he worked, that the thesis submitted is a record of research work done by the candidate during the period of study under him, and that the thesis has not previously formed the basis for the award to the candidate of any Degree, or Diploma, or Associateship, or Fellowship, or other similar title; together with a statement from the Teacher indicating the extent to which the thesis represents independent work on the part of the candidate.

Date for submission of application and thesis.

7. The application for the Degree and the thesis must be forwarded so as to be received by the Registrar on any day in the month of January or August and after completion of the research work in accordance with the conditions laid down in Regulation 2 *supra*.

Supplementary papers.

A candidate may also forward as supplementary papers to his thesis printed copies of any contribution or contributions to the knowledge of his subject or of any cognate branch of science he may have published in Journals or Periodicals and the names of such Journals or Periodicals.

Evaluation of thesis.

8. The thesis shall be referred by the Syndicate, for report, to a Board of three Examiners. At the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination; provided, however, it shall be competent for the Syndicate in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in India, should the first mentioned Board of Examiners consider this necessary prior to coming to a decision. After receipt from the Board or Boards of the report on the thesis and on the oral examination, if any, the Syndicate may decide whether the candidate has qualified for the Degree or not. The decision of the Syndicate shall be published in the *Fort St. George Gazette*.

Publication.

9. The thesis, whether approved or not, shall not be published without the sanction of the Syndicate, and the Syndicate may grant permission for the publication under such conditions as it may impose.

Number of chances.

10. A candidate shall not be permitted to submit a thesis for the Degree on more than two occasions, provided, however, it shall be competent for the Syndicate, if the Board of Examiners so recommend, to permit the candidate to submit a thesis on a third occasion.

Exception.

11. Teachers who are working in the University or Teachers in Colleges affiliated to or recognised by the University and who are Heads of Departments in Honours or First Grade or Professional Colleges may be permitted to submit theses for the Degree without working under supervision, provided, however, they register themselves for the Degree beforehand as specified in Regulation 2 *supra*; and provided further the Syndicate is satisfied with the laboratory and other facilities for research available in such institutions. This concession shall not apply to Teachers who are not Heads of Departments. Teachers on the staff of an Affiliated or a Constituent College may be permitted to register for a Master's Degree and to prosecute research in the College for that degree while still working as a member of the staff.

CHAPTER LIII.

Degree of Doctor of Science (D. Sc.)

(Common to all Science Faculties and the Faculties of Medicine and Engineering.)

Eligibility.

1. A Master of Science or Doctor of Philosophy, in any of the above Faculties of this University, may present himself for the Degree of Doctor of Science (D. Sc.), the highest Degree of this University in the above Faculties, three years after having qualified for the Degree of M. Sc. or two years after having qualified for the Degree of Ph. D.

Application and thesis.

2. The candidate shall state in his application the special subject upon a knowledge of which he bases his qualification for the Doctorate. Such subject shall be one which relates to the branch of knowledge chosen for the preliminary Degree. If the thesis submitted has formed in part the basis for the award of a previous research degree, the candidate shall clearly set forth in a preface or written statement the portion or portions upon which has been based the award of the previous degree. He shall submit with his application four copies of his thesis, which shall ordinarily be published work or published papers or books that make a distinct contribution to scientific knowledge

Note :—A thesis must be on one main theme, and no candidate can submit as a thesis a series of unconnected papers. A series of connected papers can be submitted provided they form one connected theme; and additional papers can be submitted in support of the main thesis only on the understanding that the candidate indicates in the preface the main work, or memoir, or thesis upon which he bases his application.

Declaration.

3. The thesis shall be accompanied by a declaration signed by the candidate that it has been composed by himself independently, and a certificate that the thesis has not previously formed the basis for the award of any Degree other than a

Master's Degree or Ph.D. Degree, Diploma, Associateship, Fellowship or other similar title. If the thesis has not already been published, it shall be published by the candidate in such manner as the Syndicate shall approve.

Preface and notes.

4. The candidate shall indicate generally, in a preface to his thesis and specially in notes, the sources from which his information is taken and the extent to which he has availed himself of the work of others; he shall also state in what respect his investigations appear to him to tend to the advancement of scicnce or otherwise form a valuable contribution to the literature of the subject dealt with.

Date for submission of application and thesis.

5. The application and the thesis must be forwarded with the prescribed fee* so as to reach the Registrar on any day in the month of January or August, and after the lapse of the period mentioned in Regulation 1 *supra*.

Additional papers.

6. The candidate may with the thesis forward printed copies of any original contribution or contributions to the knowledge of his subject or of any cognate subject which may have been published by him independently or conjointly and upon which he relies in support of his candidature.

Evaluation of thesis.

7. The thesis, together with any other contributions and papers submitted, shall be referred by the Syndicate, for report, to a Board of three Examiners. At the discretion of the Board of Examiners the candidate may be asked to submit to an oral examination; provided, however, it shall be competent for the Syndicate, in the case of a Board of Examiners outside India, to arrange for the holding of an oral examination by a Board of Examiners in India, should the first mentioned Board of Examiners consider this necessary prior to coming to a decision. After receipt from the Board or Boards of the report on the thesis and on the oral examination, if any, the Syndicate may decide whether the candidate has qualified for the Degree or not:

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*The fee prescribed for applying for the D.Sc. Degree is Rs. 250/-.

provided that it shall be competent for the Board of Examiners, if a candidate fails to reach the standard for the D.Sc. Degree, to recommend him for the Degree of Ph. D.

The decision of the Syndicate shall be published in the *Fort St. George Gazette.*

Number of chances.

8. A candidate shall not be permitted to submit a thesis for the Degree on more than two occasions; provided, however, it shall be competent for the Syndicate, after having taken into consideration the remarks of the Board of Examiners, to permit a candidate to submit a thesis on a third occasion.

Exception.

9. The Syndicate may, in exceptional circumstances on the record of approved work already published and assessed by an independent Committee appointed by the Syndicate, permit a Degree holder in any of the Faculties of Science and the Faculty of Medicine of this University to supplicate for the highest Degree (D. Sc.) of this University without any preliminary Research Degree to his credit, provided that 7 years have elapsed from the date of taking his first Degree.

CHAPTER LIV.

Oriental Title Examinations.

1. The following shall be the Titles awarded :—

Titles.

(i) Siromani (added to Mimamsa, Vedanta, Nyaya, Vyakarana, Sahitya, Ayurveda and Jyotisha).

(ii) Vidvan.

(iii) (a) Afzal-ul-Ulama.

(b) Munshi-i-Fazil.

(c) Adib-i-Fazil.

(d) Tabib-i-Kamil.

(e) Afzal-ul-Atibba.

(iv) (a) Malpan.

(b) Soppar.

Subjects.

2. (i) Candidates for Siromani shall take Sanskrit alone.

(ii) Candidates for Vidvan shall take—

(a) Sanskrit and one of the following languages :—

Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya, Hindi, selected at the option of the candidate; or

(b) One of the following languages as the main language with Sanskrit as a subsidiary language :—Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya, Hindi;

(c) * * * * *

or

(d) One of the following languages :—Tamil, Telugu, Kannada, Malayalam.

(iii) (a) Candidates for Afzal-ul-Ulama shall take Arabic alone; or

(b) Candidates for Munshi-i-Fazil shall take Persian as the main language with Urdu as a subsidiary language; or

(c) Candidates for Adib-i-Fazil shall take Urdu as the main language with Persian, Tamil or Malayalam as a subsidiary language; or

(d) Candidates for Tabib-i-Kamil shall take Tibb-i-Unani in Persian as the main language with Urdu as a subsidiary language; or

(e) Candidates for Afzal-ul-Atibba shall take Tibb-i-Unani in Arabic as the main language with Urdu as a subsidiary language.

(iv) (a) Candidates for Malpan shall take Syriac; or

(b) Candidates for Soppar shall take Syriac as the main language with Hebrew as a subsidiary language.

Preliminary qualification.

3. Candidates for the Oriental Title Examination shall have passed the Matriculation Examination of the University or an examination accepted by the Syndicate as equivalent thereto, or the Entrance Test prescribed, and shall have thereafter pursued a course of study for four academic years or twelve terms in a Constituent or an Affiliated College or an approved Oriental Institution.

Examination—Preliminary and Final.

4. The course of studies for the Oriental Title Examination shall comprise a Preliminary and a Final Part.

Duration and Course of Studies.

5. The course for the Preliminary Part of the examination shall extend over a period of two academic years or six terms and shall be as follows:—

I. *Siromani.*—There shall be two divisions in the Preliminary Part, 1. General, and 2. Special.

1. The general division shall consist of (a) prescribed books relating to the elements of Tarka, Mimamsa and Vyakarana, and (b) prescribed text-books chosen from among the Mantras, Brahmanas, Upanishads, the Grihya and Dharma Sutras and the Smritis.

2. The course in the special division shall consist of one of the following branches of study taken by the candidate at his option:—

(i) *Mimamsa Group.*—Prescribed text-books relating to Purvamimamsa, Veda, Srauta and Dharmasastra.

(ii) *Vedanta Group.*—Prescribed text-books relating to the *Bhashya Prasthana* of one of the three South Indian schools of Vedanta, viz., Advaita, Visishtadvaita and Dvaita.

(iii) *Nyaya Group.*—Prescribed text-books relating to the Nyaya and Vaiseshika Darsanas including select portions of Purvavada.

(iv) *Vyakarana Group.*—Prescribed text-books relating to advanced Vyakarana, including select portions of standard commentaries on the *Siddhantakaumudi.*

(v) *Sahitya Group.*—Prescribed Kavyas and Natakas and a simple work in poetics.

(vi) *Jyotisha Group.*—Prescribed text-books in Jyotisha and Ganita.

(vii) *Ayurveda Group.*—Prescribed text books in Ayurveda and a certificate of having attended for one year the practice of a Hospital or Dispensary whithin the jurisdiction of this University, and approved beforehand by the Syndicate, under a recognised Ayurvedic Physician.

II. *Vidvan.*—(*a*) The course in Sanskrit shall consist of prescribed Kavyas, Natakas, a simple work in Poetics, and a prescribed portion in Grammar.

The course in the selected language shall be (1) prescribed text-books in Poetry and Prose; and (2) Composition in the selected language.

(*b*) The course in the selected language shall consist of (1) prescribed text-books in Poetry and Prose; (2) prescribed text-books relating to Grammar; and (3) Composition.

The course in Sanskrit shall consist of (1) prescribed text-books in simple Poetry and Prose; (2) Elementary Grammar taught in relation to these text-books; and (3) Translation from Sanskrit into the selected language.

(*c*) * * * * *

(*d*) The course shall consist of (1) prescribed text-books in Poetry and Prose; (2) prescribed text-books

relating to Grammar; (3) Composition in the selected language; and (4) History of South India.

III. (a) *Afzal-ul-Ulama.*—The course shall consist of—

(1) Tafsir, Hadith and Usul-i-Hadith.
(2) Fiqh, 'Aqa'id and Mantiq.
(3) Prose and Poetry text-books.
(4) History of Arabic Language and Literature.
(5) Translation from Arabic into Urdu, Tamil or Malayalam and *vice versa.*
(6) Grammar, Rhetoric and Prosody.

(b) *Munshi-i-Fazil.*—The course shall consist of—

(1) Persian Prose text-books.
(2) Persian Poetry text-books.
(3) Grammar, Rhetoric and Prosody.
(4) Islamic History.
(5) Prescribed text-books in Urdu.
(6) Translation from Persian into Urdu and *vice versa.*

(c) *Adib-i-Fazil.*—The course shall consist of—

(1) Urdu Prose text-books.
(2) Urdu Poetry text-books.
(3) Grammar, Rhetoric and Prosody.
(4) Islamic History.
(5) Prescribed text-books in Persian.
(6) History of Urdu Language and Literature.

(d) *Tabib-i-Kamil.*—The course shall consist of—

(1) Kulliyath.
(2) Tashrihul A'da.
(3) Kimiyah and Manafi'ul-A'da.
(4) ' Ilmul Adwiyat was Saidalah.
(5) Tarikhi Tib.
(6) Hifzani Sihat.

Candidates shall produce a certificate of having attended for one year the practice of a Unani Hospital or Dispensary within the jurisdiction of this University and

approved beforehand by the Syndicate, under a recognised Unani Physician.

(e) *Afzal-ul-Atibba.*—The course shall consist of—

(1) Kulliyath.
(2) Tashrihul A'da.
(3) Kimiyah and Manafi'ul-A'da.
(4) 'Ilmul Adwiyah was Saidalah.
(5) 'Ilmust Sihhat.
(6) Tarikhi Tib.

Candidates shall produce a certificate of having attended for one year the practice of a Unani Hospital or Dispensary within the jurisdiction of this University and approved beforehand by the Syndicate, under a recognised Unani Physician.

IV. (a) *Malpan.*—The course shall consist of—

(1) Prose text-books.
(2) Poetry text-books.
(3) History of the Syriac Language and Literature.
(4) Translation from Syriac into English, Tamil or Malayalam, and from English, Tamil or Malayalam into Syriac.
(5) Composition in Syriac.

(b) *Soppar.*—The course in Syriac shall consist of—

(1) Syriac Prose.
(2) Syriac Poetry.
(3) Translation from Syriac into English, Tamil or Malayalam, and from English, Tamil or Malayalam into Syriac.
(4) Composition in Syriac.

The course in Hebrew shall consist of—

(1) Hebrew Prose.
(2) Hebrew Poetry.

The examination papers on the text-books may contain also questions on Grammar.

Scheme of Examination—Preliminary part.

6. The scheme of examination for the Preliminary Part shall be as follows:—

I. *Siromani*—

	Hours.	Marks.
(1) Prescribed text-books—General I...	3	100
(2) Do. do. II...	3	100
(3) Do. do. III...	3	100
(4) Do. Special I...	3	100
(5) Do. do. II...	3	100
(6) Do. do. III...	3	100
Total ...		600

II. *Vidvan (a)*—

(1) Prescribed text-books in Sanskrit I	3	100
(2) Do. II	3	100
(3) Do. III	3	100
(4) Prescribed text-books in the selected Language I	3	100
(5) Prescribed text-books in the selected Language II	3	100
(6) Composition in the selected Language	3	100
Total ...		600

Vidvan (b)—

(1) Prescribed text-books in the Main Language I	3	100
(2) Prescribed text-books in the Main Language II	3	100
(3) Composition in the Main Language	3	100
(4) Grammar	3	100
(5) Prosody and Poetics	3	100
(6) Sanskrit	3	100
Total ...		600

Vidvan (*c*)— * * * *

Vidvan (*d*)—

		Hours.	Marks.
(1)	Prescribed text-books I	3	100
(2)	Do. II	3	100
(3)	Composition	3	100
(4)	Grammar I	3	100
(5)	Do. II	3	100
(6)	History of South India	3	100
	Total ...		600

III. (*a*) *Afzal-ul-Ulama*—

(i)	(1) Tafsir, Hadith and Usul-i-Hadith ...	3	100
	(2) Fiqh, 'Aqa' id and Mantiq ...	3	100
	(3) Prose and Poetry text-books ...	3	100
(ii)	(4) History of Arabic Language and Literature	3	100
	(5) Translation from Arabic into Urdu, Tamil or Malayalam and *vice versa* ...	3	100
	(6) Grammar, Rhetoric and Prosody ...	3	100
	Total ...		600

(*b*) *Munshi-i-Fazil*—

(i)	(1) Persian Prose text-books	3	100
	(2) Persian Poetry text-books ...	3	100
	(3) Grammar, Rhetoric and Prosody ...	3	100
	(4) Islamic History ...	3	100
(ii)	(5) Prescribed text-books in Urdu ...	3	100
	(6) Translation from Persian into Urdu and *vice versa* ...	3	100
	Total ...		600

(*c*) *Adib-i-Fazil*—

		Hours.	Marks.
(i)	(1) Urdu Prose text-books	3	100
	(2) Urdu Poetry text-books	3	100
	(3) Grammar, Rhetoric and Prosody ...	3	100
(ii)	(4) Islamic History ...	3	100
	(5) Prescribed text-books in Persian, Tamil or Malayalam ...	3	100
	(6) History of Urdu Language and Literature...	3	100
		Total ...	600

(*d*) *Tabib-i-Kamil*—

		Hours	Marks
(i)	(1) Kulliyath ...	3	100
	(2) Tashrihul A'da ...	3	100
	(3) Kimiyah and Manafi'ul-A'da ...	3	100
	(4) 'Ilmul Adwiyat was Saidalah ...	3	100
(ii)	(5) Tarikhi Tib ...	3	100
	(6) Hifzani Sihat ...	3	100
		Total ...	600

(*e*) *Afzal-ul-Atibba*—

		Hours	Marks
(i)	(1) Kulliyath ...	3	100
	(2) Tashrihul A'da ...	3	100
	(3) Kimiyah and Manafi'ul-A'da ...	3	100
	(4) 'Ilmul Adwiyat was Saidalah ...	3	100
(ii)	(5) 'Ilmust Sihhat ...	3	100
	(6) Tarikhi Tib ...	3	100
		Total ...	600

IV. (a) *Malpan*—

	Hours.	*Marks.*
(1) Prose text-books—Syriac ...	3	100
(2) Poetry text-books—Syriac ...	3	100
(3) History of the Syriac Language and Literature ...	3	100
(4) Translation from Syriac into Tamil or Malayalam or English ...	3	100
(5) Translation from English, Tamil or Malayalam into Syriac ...	3	100
(6) Composition in Syriac ...	3	100
Total ...		600

(b) *Soppar*—

(1) Syriac Prose ...	3	100
(2) Syriac Poetry ...	3	100
(3) Translation from Syriac into Tamil or Malayalam or English ...	3	100
(4) Translation from English, Tamil or Malayalam into Syriac ...	3	100
(5) Composition in Syriac ...	3	100
(6) Hebrew Prose and Poetry ...	3	100
Total ...		600

Marks qualifying for a pass.

7. A candidate shall be declared to have passed the Preliminary Examination if he obtains not less than 35 per cent of the total marks and not less than 30 per cent of the marks in each division of the examination.

The Divisions shall be as follows:—

I. *Siromani*—

(1) General part; (2) Special part.

II. *Vidvan*—

(*a*) (1) Sanskrit; (2) Selected Language.
(*b*) (1) First three papers; (2) last three papers (with a minimum of 25 per cent for Sanskrit).
(*c*) * * * * *
(*d*) (1) Papers 1, 2 and 6; (2) papers 3, 4 and 5.

III. (*a*) *Afzal-ul-Ulama*—

(1) first three papers;
(2) last three papers.

(*b*) *Munshi-i-Fazil*—

(1) first four papers;
(2) last two papers.

(*c*) *Adib-i-Fazil*—

(1) first three papers;
(2) last three papers.

(*d*) *Tabib-i-Kamil*—

(1) first four papers;
(2) last two papers.

(*e*) *Afzal-ul-Atibba*—

(1) first four papers;
(2) last two papers.

IV. (*a*) *Malpan*—

(1) first three papers;
(2) last three papers.

(*b*) *Soppar*—

(1) Papers 1, 2 and 6 (with a minimum of 25 per cent for Hebrew);
(2) papers 3, 4 and 5.

Classification of successful candidates.

8. Successful candidates in the Preliminary Examination shall be arranged in three classes :—

The first, consisting of those who obtain not less than 60 per cent, the second, of those who obtain less than 60 per cent and not less than 50 per cent, and the third, of those who obtain less than 50 per cent of the total marks.

Exemption.

9. For the purpose of enabling him to appear for the Final Part under the conditions prescribed, a candidate who has passed Group D under Part III of the Intermediate Examination shall be considered to have passed the Preliminary Part of the Oriental Title Examination in the language or languages in which he has already passed in Group D.

Final part.

10. The course of studies and scheme of examination and marks for the Final Part shall be the same as for Part II of the B.O.L. (Pass) Degree, excluding the provision for General Indian History.

Passing in Preliminary before Final.

11. No candidate shall be admitted to the Final Part of the Examination unless he has passed the Preliminary Part and has thereafter undergone the prescribed course for two academic years or six terms.

Such candidates shall take for the Final Part of the Oriental Title course the same language or languages that were taken in the Preliminary Part.

Languages in which the question papers will be set.

12. All the papers for the Oriental Title Examination (Preliminary and Final) shall be set and answered in the respective languages to which they relate, provided that the papers in Sanskrit as the subsidiary language for Vidvan (*b*) shall be set in Sanskrit and answered in the main language.

Oriental Title holders qualifying for another Title or for another subject in the same Title.

13. A candidate who has qualified for a Title in Oriental Learning of this University shall be permitted to appear for the Examination for a different Title or for a different subject in the same Title provided that the Syndicate is satisfied that he has undergone the prescribed course of study for the selected new Title or for the selected new subject in the same Title by attending an Oriental College for the prescribed period of not less than two academic years *or* six terms for the Preliminary and for the same period for the Final Division of the Course after passing the Preliminary Division.

Exemptions.

A candidate who has qualified for any of the Titles specified below shall be exempted from a part of the course of studies and examination, and shall pursue a course of study for one academic year *or* three terms for the Preliminary, and for the same period for the Final Division, after passing the Preliminary Division :—

Subject which the candidate has passed.	Subject which the candidate chooses.	Subject exempted.
1. (a) Any one of the subjects for the Siromani	Any other subject for the Siromani	General Part in the Siromani.
(b) One of the South Indian Schools of Vedanta for the Siromani	Another South Indian School of Vedanta for the Siromani	General Part in the Siromani, and also the subjects in B.O.L. Part II Gr. I Special (b) (2) for the Final.
II. Any subject for the Siromani	Vidvan (a) or (b)	Sanskrit Part.
III. Vidvan (a)	Vidvan (b)	Sanskrit Part.
IV. Vidvan (b) or (d)	Vidvan (a)	Selected Language Part.
V. Munshi-i-Fazil	Adib-i-Fazil	Persian as subsidiary.
VI. Adib-i-Fazil	Munshi-i-Fazil	Urdu as subsidiary.

14. Candidates who appeared for the Preliminary and/or Final Part of the Oriental Title Examination under the Old Regulations and failed therein shall be permitted to appear for the respective Part or Parts of the corresponding Oriental Title Examination under the Revised Regulations; provided, however, that candidates who appeared for the Vidvan Title Examination under the Old Regulation 7-C may be permitted to appear for the Examination for Vidvan (b) or (d) under the Revised Regulations.

CHAPTER LV.

Degree of Bachelor of Oriental Learning (Pass).

Conditions of admission.

1. Candidates for the B.O.L. Degree Examination shall be required to have passed the Intermediate Examination in Arts and Science of this University with Group D, or an examination accepted by the Syndicate as equivalent thereto, and to have subsequently undergone a prescribed course of study in a Constituent or an Affiliated College for a period of not less than two academic years or six terms.

Course of Study.

2. The course for the B.O.L. Degree shall comprise the following subjects according to syllabuses to be prescribed from time to time :—

Part I—English.—To be studied for one academic year or three terms.

Part II—A. General Indian History, and

B

One of the following Groups to be studied for a period of two academic years or six terms :—

Group I—Sanskrit with one of the following as an optional subject :—

(*a*) Mimamsa, (*b*) Vedanta, (*c*) Nyaya, (*d*) Vyakarana, (*e*) Sahitya, (*f*) Jyotisha, or (*g*) Ayurveda.

Group II—(*a*) Sanskrit and one of the following languages at the option of the candidates :—Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya and Hindi.

or

(*b*) One of the following languages as the main language with Sanskrit as a subsidiary language :—Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya and Hindi.

(*c*) * * * *

or

(*d*) One of the following languages :—Tamil, Telugu, Kannada, and Malayalam.

Group III—(*a*) Arabic; (*b*) Persian and Urdu; (*c*) Urdu and one of the following languages selected at the option of the candidate:—Persian, Tamil, Malayalam; (*d*) Tibb-i-Unani in Persian and Urdu; *or* (*e*) Tibb-i-Unani in Arabic and Urdu.

Group IV—(*a*) Syriac, *or* (*b*) Syriac as the main language with Hebrew as a subsidiary language.

Part I—English—(1) The study in detail of certain prescribed text-books, and (2) the study of certain books prescribed for perusal.

Part II—A. General Indian History.

B.

Group I—

General—

(1) History of Sanskrit Language and Literature.

(2) Essay on subjects connected with the special subject or general subject.

Special—

(*a*) (1) Prescribed text-books relating to Purva-mimamsa.

(2) Application of Mimamsa to Vedic Exegesis and to the proper comprehension of the social and legal aspects of the Dharmasastras.

(*b*) (1) Prescribed text-books relating to the *Veda Prasthana* of one of the three South Indian Schools of Vedanta, viz., Advaita, Visishtadvaita and Dvaita.

(2) Prescribed text-books relating to Yoga, Sankhya and the elements of the three South Indian Schools of Vedanta.

(*c*) Prescribed text-books relating to Nyaya and Vaiseshika Darsanas including select portions of *Uttaravada* and *Sabdabodha* works in Nyaya and Mimamsa.

(*d*) Prescribed text-books relating to advanced Vyakarana, including *Sabdabodha* works in Vyakarana and select portions of the *Mahabhashya* and standard commentaries on the *Siddhantakaumudi*.

(*e*) (1) Prescribed text-books relating to Grammar, Prosody and Poetics.

(2) Prescribed text-books of an advanced character, relating to Alamkara Sastra.

(*f*) Prescribed text-books of an advanced character, in Jyotisha and Ganita.

(*g*) Prescribed text-books of an advanced character in Ayurveda and a certificate of having attended for two years the practice of a hospital or dispensary within the jurisdiction of this University and approved beforehand by the Syndicate, under a recognized Ayurvedic physician.

Group II—

(*a*) Sanskrit—(1) History of Sanskrit Language and Literature; and (2) Prescribed text-books relating to Grammar, Prosody and Poetics.

Selected Language—(1) Prescribed text-books; and (2) Prescribed text-books relating to Grammar, Prosody and Poetics.

(*b*) Selected Language—(1) Prescribed text-books; (2) Prescribed text-books relating to Advanced Grammar, Prosody and Poetics; and (3) History of the Language and Literature.

Sanskrit—(1) Prescribed text-books in Kavyas and Natakas; and (2) Elementary Prosody and Poetics taught in relation to the text-books under (1).

(*c*) * * * * *

(*d*) (1) Prescribed text-books; (2) Prescribed text-books relating to advanced Grammar, Prosody and Poetics; (3) History of the Language and Literature; and (4) Inscriptions.

Group III—

(*a*) (1) Tafsir, Hadith and 'Ilmul Hadith.
(2) Fiqh, Usul-ul-Fiqh and 'Ilmul Kalam.
(3) Prose and Poetry text-books.
(4) Islamic History.
(5) Falsafah and Balaghat.
(6) History of Arabic Language and Literature.

(*b*) *Part I—Persian—*

(1) Persian Prose text-books.
(2) Persian Poetry text-books.
(3) History of Persian Language and Literature.
(4) Islamic History with particular reference to Persia.

Part II—Urdu—

(5) Urdu text-books.
(6) Translation from Persian into Urdu and *vice versa*.

(*c*) *Part I—Urdu—*

(1) Urdu Prose text-books.
(2) Urdu Poetry text-books.
(3) Islamic History.
(4) History of Urdu Language and Literature.
(5) Grammar, Rhetoric and Prosody.
(6) One Author.

Part II—Persian, Tamil or Malayalam—

(7) Prescribed text-books in Persian or Tamil or Malayalam.

(*d*) Prescribed books of an advanced character in Tibb-i-Unani in Persian and Urdu and a certificate of having attended for two years the practice of a Unani Hospital or Dispensary within the jurisdiction of this University and approved beforehand by the Syndicate, under a recognised Unani Physician.

(*e*) Prescribed books of an advanced character in Tibb-i-Unani in Arabic and Urdu and a certificate of having attended for two years the practice of a Unani Hospital or Dispensary within the jurisdiction of this University and approved beforehand by the Syndicate, under a recognised Unani Physician.

The prescribed text-books shall comprise the following subjects :—

(1) Kulliyath and Kimiyah.
(2) Tashrihul A'za wa Manafi'ul A'za.
(3) 'Ilmul Adwiyah and 'Ilmus Saidalah.
(4) Tarikhi Tib.
(5) 'Ilmul Tashkhis.

(6) 'Ilmul Amirad wal Jarathim.
(7) Tibb-i-Qanuni.
(8) Mu'alijat.
(9) 'Ilmul Qabilah.

Group IV—

(*a*) (1) Prescribed text-books in Prose.
(2) Prescribed text-books in Poetry.
(3) History of Syriac Language and Literature.
(4) Translation from Syriac into English, Tamil or Malayalam and from English, Tamil or Malayalam into Syriac.
(5) Composition in Syriac.

The examination papers on the text-books may also contain questions on Grammar.

(*b*) Syriac as the Main subject shall include—
(1) Syriac Prose.
(2) Syriac Poetry.
(3) Translation from Syriac into English, Tamil or Malayalam, and from English, Tamil or Malayalam into Syriac.
(4) Composition in Syriac.

Hebrew as a subsidiary subject shall consist of—

(1) Hebrew Prose.
(2) Hebrew Poetry.

The examination papers on the text-books may also contain questions on Grammar.

3. The scheme of examination shall be as follows :—

Scheme of Examination.

**Part I. English.*

			Hours.	*Marks.*
English Prose	...	...	3	100
English Composition	...	...	3	100
		Total	...	200

[**Note*.—These two papers shall be the same as those for the B. A. (Honours) Degree Examination—Part I—Preliminary.]

Part II.—The examination shall consist of one paper on †General Indian History and six papers in the particular language or languages selected.

		Hours.	Marks.
A. General Indian History	...	3	100

B

Group I.—There shall in the general part be one paper on the History of Sanskrit Language, one paper on the History of Sanskrit Literature, one paper on Essay, and in the special part three papers on the prescribed text-books.

Scheme of Examination.

		Hours.	Marks.
(1) History of Sanskrit Language	...	3	100
(2) History of Sanskrit Literature	...	3	100
(3) Essay	...	3	100
(4) Prescribed text-books—Special I	...	3	100
(5) Do. Do. II	...	3	100
(6) Do. Do. III	...	3	100
Total	...		600

Group II (a).—There shall in Sanskrit be two papers on the prescribed text-books, and one paper on the History of Sanskrit Language and Literature. In the selected Language there shall be two papers on the prescribed text-books and one paper on Grammar, Prosody and Poetics.

Scheme of Examination.

		Hours.	Marks.
(1) Prescribed text-books in Sanskrit I		3	100
(2) Do. II		3	100
(3) History of Sanskrit Language and Literature	...	3	100
(4) Prescribed text-books in the selected Indian Language I	...	3	100
(5) Prescribed text-books in the selected Indian Language II	...	3	100
(6) Grammar, Prosody and Poetics	...	3	100
Total	...		600

[† The paper on General Indian History will be common with B. A. Group (iv-a).]

Group II (b).—There shall in Sanskrit be one paper, and in the selected Language there shall be two papers on the prescribed text-books, one paper on the History of Language and Literature, one paper on Grammar, and one paper on Prosody and Poetics.

Scheme of Examination.

	Hours.	Marks.
(1) Prescribed text-books in the Language I ...	3	100
(2) Prescribed text-books in the Language II ...	3	100
(3) History of Language and Literature.	3	100
(4) Grammar ...	3	100
(5) Prosody and Poetics ...	3	100
(6) Sanskrit ...	3	100
Total ...		600

Group II (c) * * * *

Group II (d).—There shall be two papers on prescribed text-books, two papers on Advanced Grammar, Prosody and Poetics, one paper on the History of Language and Literature and one paper on Inscriptions.

Scheme of Examination.

	Hours.	Marks
(1) Prescribed text-books I ...	3	100
(2) Do. II ...	3	100
(3) Advanced Grammar, Prosody and Poetics I ...	3	100
(4) Advanced Grammar, Prosody and Poetics II ...	3	100
(5) History of Language and Literature.	3	100
(6) Inscriptions ...	3	100
Total ...		600

Group III.—The scheme of examination shall be as follows :—

Scheme of Examination.

		Hours.	Marks.
(*a*)	(1) Tafsir, Hadith and Ilmul-Hadith...	3	100
	(2) Fiqh, 'Usul'-ul-Fiqh and Ilmul-Kalam ...	3	100
	(3) Prose and Poetry text-books ...	3	100
	(4) History of Arabic Language and Literature ...	3	100
	(5) Falsafah and Balaghat ...	3	100
	(6) Islamic History ...	3	100
	Total ...		600
(*b*)	(1) Persian Prose text-books ...	3	100
	(2) Persian Poetry text-books ...	3	100
	(3) History of Persian Language and Literature ...	3	100
	(4) Islamic History with particular reference to Persia ...	3	100
	(5) Urdu texts ...	3	100
	(6) Translation from Persian into Urdu and *vice versa* ...	3	100
	Total ...		600
(*c*)	(1) Urdu Prose text-books ...	3	100
	(2) Urdu Poetry text-books ...	3	100
	(3) Islamic History ...	3	100
	(4) Prescribed text-books in Persian, Tamil or Malayalam ...	3	100
	(5) History of Urdu Language and Literature ...	3	100
	(6) One of the following authors:— 1. Shibli. 2. Hali. 3. Sarshar. 4. Sir Sayyid. 5. Iqbal. 6. Sharar.	3	100
	Total ...		600

		Hours.	Marks.
(d)	(1) 'Ilmul Tashkhis ...	3	100
	(2) Mulalajat—General ...	3	100
	(3) Do. 'Ilmul Jarahat ...	3	100
	(4) Ilmul Amrad wal Jarathim	3	100
	(5) Amradi-Niswan wa Sibyan wa 'Ilmul Qabilah ...	3	100
	(6) Tibbi Qanuni wa 'Ilmus Sumum ...	3	100
		Total ...	600
(e)	(1) 'Ilmul Tashkhis ...	3	100
	(2) Mulalajat—General ...	3	100
	(3) Do. 'Ilmul Jarahat ...	3	100
	(4) 'Ilmul Amrad wa 'Ilmul Jarathim ...	3	100
	(5) 'Ilmul Amrad-al-atfal-wan Niswan wa 'Ilmul Qabilah	3	100
	(6) Tibbi Qanuni and 'Ilmul Sumum ...	3	100
		Total ...	600

Group IV (a).—There shall in Syriac be two papers on prescribed text-books, one paper on the History of the Syriac Language and Literature, two papers on Translation from Syriac into English, Tamil or Malayalam and *vice versa*, and one paper on Composition in Syriac.

Scheme of Examination.	Hours.	Marks.
(1) Prose text-books—Syriac ...	3	100
(2) Poetry text-books—Syriac ...	3	100
(3) History of the Syriac Language and Literature ...	3	100
(4) Translation from Syriac into Tamil or Malayalam or English ...	3	100

	Hours.	Marks.
(5) Translation from English, Tamil or Malayalam into Syriac ...	3	100
(6) Composition in Syriac ...	3	100
Total ...		600

Group IV (*b*).—There shall in Syriac be two papers on prescribed text-books, two papers on Translation from Syriac into English, Tamil or Malayalam and *vice versa*, one paper on Composition in Syriac and one paper on prescribed text-books in Hebrew.

Scheme of Examination.

	Hours.	Marks
(1) Syriac Prose ...	3	100
(2) Syriac Poetry ...	3	100
(3) Translation from English, Tamil or Malayalam into Syriac ...	3	100
(4) Translation from Syriac into English, Tamil or Malayalam ...	3	100
(5) Composition in Syriac ...	3	100
(6) Hebrew Prose and Poetry ...	3	100
Total ...		600

Eligibility for Degree—when.

4. No candidate shall be eligible for the Degree of Bachelor of Oriental Learning until he has completed the course of study prescribed and has passed the examination in the subjects prescribed for the course in Regulations 2 and 3 *supra*.

Part I Examination may be taken in first year.

5. A candidate for the B.O.L. Degree Examination may present himself for Part I at the end of the first year of the course and thereafter may at any time at his option present himself for the whole or for either part.

Passing minimum.

6. A candidate shall be declared to have passed Part I of the examination if he obtains not less than 35 per cent of the total marks.

A candidate shall be declared to have passed Part II of the examination if he obtains not less than 35 per cent of the total marks and 30 per cent in each division.

The Divisions shall be as follows:—

In all the Groups, General Indian History shall be a separate division.

Group I—

(1) General Part; (2) Special Part.

Group II—

(*a*) (1) Sanskrit; (2) Selected Language.

(*b*) (1) First three papers; (2) last three papers (with a minimum of 25 per cent for Sanskrit).

(*c*) * * * * *

(*d*) (1) Text-books and Inscriptions; (2) Grammar and History of Language and Literature.

Group III—

(*a*) Afzal-ul-Ulama—

(1) First three papers; (2) last three papers.

Divisions of the subjects for examination.

(*b*) Munshi-i-Fazil—

(1) First four papers; (2) last two papers.

(*c*) Adib-i-Fazil—

(1) First three papers; (2) last three papers (with 25 per cent minimum in the fourth paper).

(*d*) Tabib-i-Kamil—

(1) First four papers; (2) last two papers.

(*e*) Afzal-ul-Atibba—

(1) First four papers; (2) last two papers.

Group IV—

(*a*) Malpan—

(1) First three papers; (2) last three papers.

(*b*) Soppar—

(1) Papers 1, 2, and 6 (with a minimum of 25 per cent in paper 6); (2) papers 3, 4 and 5.

7. There shall be separate lists of successful candidates in each Part. Candidates obtaining not less than 60 per cent of the total marks in Part I shall be declared to have passed with distinction in that Part.

Classification of successful candidates.

In Part II, candidates who obtain not less than 60 per cent of the total marks shall be placed in the first class, those who obtain less than 60 per cent, but not less than 50 per cent of the total marks shall be placed in the second class, and all the other successful candidates shall be placed in the third class.

8. A candidate who has qualified for the B.A. or B.Sc. (Pass or Honours), or has passed only Part I of the B. A. or B.Sc. (Pass or Honours), or B.O.L. (Honours) Examination of this University, shall be exempted from the course and examination in Part I of the B.O.L. Degree. He shall be credited with a pass in that Part.

Exemption.

9. All the papers for the B.O.L. Degree Examination under Part II (except the paper on General Indian History) shall be set and answered in the respective languages to which they relate; provided that papers in Sanskrit as a subsidiary language for Group II (*b*) shall be set in Sanskrit and answered in the respective main language.

Language in which question papers will be set.

10. A candidate who has qualified for the B. O. L. (Pass) Degree Examination of this University shall be permitted to appear for a different Optional Group under Part II of the B.O.L, (Pass) Degree Examination, provided that the Syndicate is satisfied that he has undergone the prescribed course of study for the selected new group of optional subjects by attending a Constituent or an Affiliated College for a period of not less than one academic year *or* three terms. He shall be exempted from the course of study and examination under Part I—English and in General

B. O. L. (Pass) Degree holder qualifying for another Optional Branch.

Indian History under Part II; he shall further be exempted from the course of study and examination in the subjects as defined below:—

Exemptions.

Optional subject which the candidate has passed.	Optional subject which the candidate chooses.	Subject exempted.
I. (*a*) Any subject in Group I	Any other subject in Group I	General Part.
(*b*) Any one of the South Indian Schools of Vedanta in Group I	Any other South Indian School of Vedanta in Group I	General Part and also subjects in Gr. I Special (*b*) (2).
II. Any subject in Group I	Group II (a) or (b)	Sanskrit Part.
III. Group II (a)	Group II (b)	Sanskrit Part.
IV. Group II (b) or (d)	Group II (a)	Selected Language Part.
V. Group III (b)	Group III (c)	Persian Part.
VI. Group III (c)	Group III (b)	Urdu Part.

(These candidates need not take Intermediate—Group D in the new language or subject).

CHAPTER LVI.

Degree of Bachelor of Oriental Learning (Honours).

Conditions of admission.

1. Candidates for the B.O.L. (Honours) Degree shall be required to have passed the Intermediate Examination in Arts and Science of this University with Group D, or an examination accepted by the Syndicate as equivalent thereto and to have subsequently undergone a prescribed course of study in a Constituent or an Affiliated College for a period of not less than three academic years or nine terms.

2. The course shall consist of two parts, Part I—English, and Part II—the advanced study of a selected Language.

Part I—Preliminary: English—to be studied for one academic year or three terms.

Part II—Final: One of the following Branches to be studied for a period of three academic years or nine terms:—

Branch I—Sanskrit.

Branch II—One of the following languages:—

Course of Study.

Tamil, Telugu, Kannada, Malayalam.

Branch III—One of the following languages:— Arabic, Persian, Urdu.

Part I—English.

(1) The study in detail of certain prescribed text-books; and (2) the study of certain books prescribed for perusal.

Part II—

A

One of the following Branches:—

Branch I—Sanskrit.

The course shall consist of (*a*) a general and (*b*) a special part.

(*a*) General—1. History of Language and Literature.
2. Essay.

(*b*) Special—One of the following subjects:—
(1) Mimamsa, (2) Vedanta, (3) Nyaya, (4) Vyakarana, (5) Sahitya, (6) Jyotisha, (7) Ayurveda.

Note.—The text-books prescribed for the B.O.L. (Honours) Degree Examination in these various subjects shall include works of a distinctly higher standard than those prescribed for the B.O.L. (Pass) Degree Examination.

Branch II—One of the following languages: (*a*) Tamil, (*b*) Telugu, (*c*) Kannada, (*d*) Malayalam.

The course shall consist of prescribed text-books in the selected language, History of the Language and Philology, Grammar, History of Literature and Literary Criticism, a Cognate Language or Special Period or Special Branch of Literature, and Inscriptions and South Indian History.

Branch III—One of the following languages:—
(*a*) Arabic, (*b*) Persian, (*c*) Urdu.

B

Candidates taking Branch I or II or III (*c*)—Urdu—shall, besides the selected language, take *The History of India* and candidates taking Branch III (*a*) or (*b*) shall, besides the selected language, take *Early Islamic History.*

3. The scheme of examination shall be as follows :—

*Part I—English**.

Scheme of Examination.

		Hours.	Marks.
English Prose	...	3	100
English Composition	...	3	100
	Total ...		200

[**Note.*—These two papers shall be the same as for the B.A. (Honours) Degree Examination, Part I—Preliminary.]

Part II—There shall be seven papers in the selected language carrying a total of 1,250 marks and one paper on *The History of India* for candidates taking Branch I or II or III (*c*), and on *Early Islamic History* for candidates taking Branch III (*a*) or (*b*) carrying 150 marks.

Branch I—Sanskrit.—There shall be two papers in the General Part and five papers in the Special Part. Two papers in the Special Part shall be on books not included in the scheme of the B.O.L. (Pass) Degree Examination. In all the other five papers a higher standard shall be required than that for the B.O.L. (Pass) Degree.

Scheme of Examination.

		Hours.	*Marks.*
(1) History of Sanskrit Language and Literature	...	3	200
(2) Essay	...	3	175
(3) Prescribed Text-books—Special I	...	3	175
(4) Prescribed Text-books—Special II	...	3	175
(5) Prescribed Text-books—Special III	...	3	175
(6) Prescribed Text-books—Special IV	...	3	175
(7) Prescribed Text-books—Special V	...	3	175
Total	...		1,250

Branch II—One of the following languages :—

Tamil, Telugu, Kannada, Malayalam.

In each of the languages there shall be two papers on prescribed text-books, one paper on the Cognate Language or Special Period or Special Branch of Literature, one paper on the History of Language and Philology, one paper on Grammar, one paper on the History of Literature and Literary Criticism and one paper on Inscriptions and South Indian History.

	Hours.	*Marks.*
(1) Prescribed Text-books in the Language I ...	3	175
(2) Prescribed Text-books in the Language II ...	3	175
(3) Cognate Language or Special Period or Special Branch of Literature...	3	175
(4) History of Language and Philology..	3	175
(5) Grammar ...	3	200
(6) History of Literature and Literary Criticism ...	3	175
(7) Inscriptions and South Indian History ...	3	175
Total ...		1,250

Branch III—One of the following languages :—

Arabic, Persian, Urdu.

Arabic.—There shall be one paper on Pre-Islamic History, one paper on prescribed text-books, one paper on History of Arabic Language and Literature, one paper on Prescribed text-books (Asrar-al-Shariah), one paper on Islamic Mysticism, one paper on Grammar and Comparative Philology and one paper on Essay.

		Hours.	*Marks.*
A	(1) Pre-Islamic History ...	3	175
A	(2) Prose and Poetry Text-books ...	3	175
A	(3) History of Arabic Language and Literature ...	3	175
B	(4) Prescribed Text-books (Asrar-al-Shariah) ...	3	175
B	(5) Islamic Mysticism ...	3	175
C	(6) Grammar and Comparative Philology ...	3	175
C	(7) Essay ...	3	200
	Total ...		1,250

Persian.—There shall be two papers on prescribed text-books, two papers on History of Language and Literature, one paper on Persian Grammar, Prosody and Rhetoric, one paper on Essay in Persian, and one paper on Arabic Text-books and Grammar.

		Hours.	*Marks.*
A	(1) Prescribed Text-books in Prose ...	3	175
	(2) Prescribed Text-books in Poetry ...	3	175
B	(3) History of Language and Literature, Comparative Philology and Literary Criticism from the earliest times to the Mongol Period ...	3	175
	(4) History of Language and Literature, Comparative Philology and Literary Criticism with special reference to Mongol Period of Iranian Literature ...	3	175
	(5) Persian Grammar, Prosody and Rhetoric ...	3	175
C	(6) Essay in Persian ...	3	200
	(7) Arabic Text-books and Grammar ...	3	175
	Total ...		1,250

Urdu.—There shall be two papers on prescribed text-books, one paper on History of Urdu Literature and Literary Criticism, one paper on Comparative Philology of Indo-Aryan Languages with special reference to the development of Urdu Language, two papers on the special study of a period or an author or a subject prescribed, and one paper on a Cognate Language (Arabic, Persian or Hindi).

		Hours.	*Marks.*
A	(1) Prescribed Text-books in Prose ...	3	175
	(2) Prescribed Text-books in Poetry ...	3	175
B	(3) History of Urdu Literature and Literary Criticism ...	3	175
	(4) Comparative Philology of Indo-Aryan Languages with special reference to the development of Urdu Language ...	3	175

C		Hours.	Marks.
	(5) & (6) Special Subjects: Any two of the following subjects selecting not more than one from each Group:—		
	(a) One of the following periods:—		
	(1) Old Urdu (up to 1100 A.D.)		
	(2) Early Period of Urdu in Delhi		
	(3) Development of Urdu in Lucknow		
	(4) The Fort William College ...		
	(5) Sir Sayyid and his School ...		
	(6) Modern Period ...		
	(b) One of the following authors:—	3	175
	(1) Wali ...	3	175
	(2) Mir ...		
C	(3) Rajab Ali Baig Saur ...		
	(4) Shibli ...		
	(5) Azad Md. Husain ...		
	(6) Nazir Ahmed ...		
	(c) One of the following subjects:—		
	(1) Ghazal. (6) Ornate Prose.		
	(2) Qasida. (7) Biography.		
	(3) Mathnawi. (8) Epistles.		
	(4) Rubai. (9) Drama.		
	(5) Marthiya. ...		
	(7) Any one of the following Cognate Languages:—	3	200
	(1) Arabic ...		
	(2) Persian ...		
	(3) Hindi ...		
	Total ...		1,250
	*_The History of India_ for candidates taking Branch I, II or III (c) or _Early Islamic History_ [for candidates taking Branch III (a) or (b)] ...	3	150
	Grand Total (for each Branch) ...		1,400

*The paper on _The History of India_ shall be the same as for B.A. (Honours) Branch III.

Language in which question papers will be set.

4. All the papers in the examination for the B.O.L. (Honours) under Part II (except the papers on Inscriptions and South Indian History, on The History of India and on Early Islamic History) shall be set and answered in the respective languages to which they relate.

Part I Examination to be taken at the end of the first year.

5. A candidate for the B.O.L. (Honours) Degree Examination may present himself for the Preliminary Examination (Part I) at the end of the first year. No candidate shall be admitted to the Final Examination (Part II) unless he has passed the Preliminary Examination (Part I).

Final Examination to be taken only once.

6. No candidate shall be permitted to undergo the complete Final Examination in Honours more than once. A candidate for the Final Examination shall be permitted to withdraw from the examination, provided he has not sat for the last paper in the examination, and provided he has given notice of withdrawal to the Registrar within three clear days from the date of the last paper which he answered. He shall be permitted to appear again for the Final Examination in the following year without producing any additional certificate of attendance.

Note.—A candidate shall be deemed to have sat for the last paper if he has entered the hall in which the examination for the last paper is held.

7. A candidate for the B.O.L. (Honours) Degree shall be required to appear for the Final Examination in Honours—

Time-limit to appear for Final Examination.

(1) not later than the end of the fourth year after commencing the Honours Degree course in a college; or

(2) in the case of a Bachelor of Oriental Learning (Pass) proceeding to the Honours Degree Examination not later than three years after commencing the Honours Degree course in a college.

Passing minimum—Part I.

8. *Part I—English — Preliminary Examination.*—A candidate who secures not less than 40 per cent of the aggregate marks in the two papers in English shall be declared to have passed the examination in Part I.

A candidate who secures not less than 60 per cent of the aggregate marks shall be declared to have passed the examination with distinction.

Passing minimum-Part II.

9. *Part II—Final Examination.*—A candidate shall be declared to have passed the examination in one of the branches of knowledge for the B.O.L. (Honours) Degree if he obtains not less than 40 per cent of the total marks and not less than 30 per cent in each division of the examination. All the other candidates shall be deemed to have failed in the examination for Honours. The Divisions shall be as follows :—

Branch I—Sanskrit—

(1) The History of India, History of Language and Literature and Essay.

Divisions of the subjects for examination.

(2) Prescribed text-books (first three papers).

(3) Prescribed text-books (last two papers).

Branch II—Tamil, Telugu, Kannada, Malayalam—

(1) Text-books, Related Language, etc. (3 papers).

(2) History of Language and Philology and Grammar (2 papers).

(3) History of Literature and Literary Criticism, Inscriptions and South Indian History and The History of India (3 papers).

Branch III—

Arabic—

(1) Papers 1, 2 and 3.

(2) Papers 4 and 5.

(3) Papers 6 and 7 and Early Islamic History.

Persian—

(1) Prescribed Text-books (2 papers).

(2) History of Language and Literature, etc., and Persian Grammar, Prosody and Rhetoric (3 papers).

(3) Essay, Arabic Text-books and Grammar and Early Islamic History (3 papers).

Urdu—

(1) Prescribed Text-books (2 papers).

(2) History of Urdu Literature and Literary Criticism, Comparative Philology, etc., and The History of India (3 papers).

(3) Special Subjects and Cognate Language (3 papers).

Classification of successful candidates.

10. Successful candidates in the examination shall be ranked in the order of proficiency as determined by the total marks obtained by each and shall be arranged in three classes :—

Candidates who obtain not less than 60 per cent of the aggregate marks shall be placed in the first class; those who obtain less than 60 per cent but not less than 50 per cent shall be placed in the second class; and all the other successful candidates shall be placed in the third class.

Candidates for B.O.L. (Hons.)—when recommended for B.O.L.

11. In the event of a candidate for the B. O. L. (Honours) Degree failing to satisfy the Examiners, he may be recommended by them for the B.O.L. (Pass) Degree, provided that he obtains not less than $33\frac{1}{3}$ per cent of the total marks and not less than 25 per cent in each division of the examination.

Failed candidates may appear for B.O.L.

12. (*a*) A candidate not already eligible for the B.O.L. (Pass) Degree, who, having failed completely in the B. O. L. (Honours) Degree Examination, desires to appear for the B. O. L. (Pass) Degree Examination, shall be allowed to do so without the production of a

further certificate of attendance in a Constituent or an Affiliated College.

Withdrawn candidates from Hons. may appear for B.O.L.

(*b*) A candidate not already eligible for the B. O. L. (Pass) Degree who, after being registered, presents himself for the B.O.L. (Honours) Degree Examination in any year and withdraws from the same and is prevented through illness or otherwise, from subsequently presenting himself for the examination within the period prescribed under Regulation 6 (1) *supra*, shall be allowed to appear for the B.O.L. (Pass) Degree Examination without the production of a further certificate of attendance in a Constituent or an Affiliated College.

Candidates appearing under this Regulation for the B.O.L. (Pass) Degree Examination shall appear for and take under Part II of the examination the same optional subject which they studied for the B.O.L. (Honours) Degree Course. They shall be exempted from re-appearance in Part I.

Exemptions in the case of B.O.L.s

13. A candidate who has passed the B.O.L. (Pass) Degree Examination of this University under the Old Regulations or under the New Regulations or an examination of some other University accepted by the Syndicate as equivalent thereto, shall be permitted to appear and qualify for the B.O.L. (Honours) Degree examination of this University after a further course of two academic years in a Constituent or an Affiliated College of this University.

He shall be exempted from passing the B.O.L. (Honours) Preliminary Examination—Part I—English.

B. O. L. Hons.) Degree holder qualifying for another subject in B.O.L. (Hons.)

14. A candidate who has qualified for the B.O.L (Honours) Degree Examination of this University shall be permitted to appear for a different optional Branch under Part II of the B.O.L. (Honours) Degree Examination provided that the Syndicate is satisfied that he has undergone the prescribed course of study for the selected new Branch of Optional subjects by attending a Constituent or an Affiliated

College for a period of not less than two academic years or six terms and he shall be exempted from the course of study and examination in Part I—Preliminary English and in The History of India or Early Islamic History under Part II-B if he had already passed in it. A candidate who has taken any subject under Branch I shall be further exempted from the General Part under Branch I, if he selects another subject under Branch I.

CHAPTER LVII.

Titles and Degrees in Music in the Faculty of Fine Arts.

(*Sangita Siromani Title and Bachelor of Music Degree.*)

1. There shall be examinations in Indian Music qualifying for Titles and Degrees in the Faculty of Fine Arts as in Regulations *infra*.

2. The Title awarded shall be called Sangita Siromani.

SANGITA SIROMANI.

Duration of the course.

3. The course of studies for this examination shall extend over a period of four academic years and shall be pursued in a Constituent or an Affiliated College or an institution approved by the Syndicate.

Examinations.

4. The examination for the Title shall consist of two parts: the Preliminary and the Final—the Preliminary Examination at the end of the second academic year and the Final Examination at the end of the fourth academic year:

Provided, however, that no candidate shall be admitted to the Final Examination unless he has passed the Preliminary Examination, and a period of one academic year has elapsed thereafter.

5. The course of study shall be as follows:—

Preliminary.

Course of Study.

Part I—Theory of Indian Music and History of Indian Music (Modern Period) including prescribed classical works relating to the Music of the Modern Period.

Part II—A Selected Language (Sanskrit, Tamil, Telugu, Kannada or Malayalam).

The syllabuses, text-books and the examination shall be the same as those for Part II of the Intermediate Examination in the language concerned.

Part III—Practical—Vocal, Veena, Violin, Gotuvadyam, Flute, Nagaswaram. Any *two* of the above, one of which shall be of the main standard and the other of the subsidiary standard, provided vocal shall be one of the subjects chosen.

Final.

Part I—Theory of Indian Music, including the prescribed classical works on Indian Music.

History of Indian Music—Ancient and Mediæval Periods.

Part II—Practical: Main and Subsidiary.

The instrument offered for the Final Examination shall be the same as for the Preliminary Examination:

Provided, however, that a candidate may have the option in the Final Examination of interchanging the main and subsidiary subjects offered by him for the Preliminary Examination.

Scheme of Examination.

6. The scheme of examination shall be as follows:—

Preliminary.

Subjects.	*Hours.*	*Marks.*
Part I—		
Theory of Indian Music I (including the prescribed classical works) ...	3	100
Theory of Indian Music II (including the History of Indian Music) ...	3	100
Part II—		
Selected Language, Paper I ...	3	100
Selected Language, Paper II ...	3	100
Part III—		
Practical (Main)	...	125
Practical (Subsidiary)	...	75
Total ...		600

Final.	*Hours.*	*Marks.*
Part I—		
Theory of Indian Music I ...	3	100
Theory of Indian Music II (including prescribed classical works) ...	3	100
History of Indian Music ...	3	100
Part II—		
Practical (Main) I		100
Practical (Main) II		100
Practical (Subsidiary)		100
Total ...		600

Eligibility for admission to the course.

7. No person shall be permitted to enter upon the course of study for the Title unless he has satisfied the conditions laid down in Law 4 of Chapter XXXV of the Laws of the University.

Marks qualifying for a pass.

8. A candidate shall be declared to have passed the Preliminary Examination if he obtains not less than 35 per cent of the marks in each of Parts I and II, 40 per cent in Part III, and not less than 40 per cent of the total marks.

A candidate shall be declared to have passed the Final Examination if he obtains not less than 35 per cent of the marks in Part I, 40 per cent in Part II, and 40 per cent of the total marks.

Classification of successful candidates.

Successful candidates in the Final Examination shall be arranged in two classes—the First consisting of those who obtain not less than 60 per cent and the second consisting of the rest.

Exemptions from course and examination in Part II—Preliminary.

9. Candidates who have passed in Part II of the Intermediate or B.A. Degree Examination of this University with Sanskrit, Tamil, Telugu, Kannada, or Malayalam shall be exempted from being examined in Part II of the Preliminary Examination.

Other exemptions.

10. Candidates who have passed the Intermediate Examination in Arts and Science of this University with Indian Music as one of the subjects under Part III may be permitted to sit for the Preliminary Examination for the Title without being required to produce the necessary certificate of attendance.

Candidates who have passed the B. A. Degree Examination of this University with Indian Music under Part III shall be exempted from the Preliminary Examination and shall be permitted to appear for the Final Examination after undergoing the course for one academic year.

Holders of the Diploma in Indian Music of this University under the Regulations in force from 1937-38 shall be exempted from Parts I and III of the Preliminary Examination and shall be allowed to appear for the Final Examination after a course of two academic years provided they have passed in Part II of the Preliminary Examination before taking the Final Examination.

Candidates under the above Regulation who have not offered for the Intermediate or B.A. Degree Examination of this University one of the languages prescribed under Part II of the Preliminary Examination shall be required to undergo the course for one academic year and pass the examination in one of those languages not less than one academic year before appearing for the Final Examination, provided that the above course may be taken concurrently with the Sangita Siromani Course.

Degree of Bachelor of Music (B. Mus.)

Qualifications for admission to the course.

11. Candidates for the Degree of Bachelor of Music shall be required to have passed the Intermediate Examination in Arts and Science of this University with Indian Music as one of the subjects under Part III or an examination accepted by the Syndicate as equivalent thereto and to have subsequently pursued a course of study in a Constituent or an Affiliated College for a period of not less than two academic years.

Course of Study.

12. The course for the B. Mus. Degree shall consist of three parts and comprise instruction in the following subjects according to a syllabus to be prescribed from time to time.

Part I.

Any one of the following Languages at the option of the candidate:—

(i) English

(ii) Classical—

Sanskrit	Arabic
Greek	Persian
Latin	Hebrew
	Syriac

(iii) Modern—

(a) Foreign	French	German
(b) Indian	Tamil	Marathi
	Telugu	Oriya
	Kannada	Hindi
	Malayalam	Burmese
	Urdu	Sinhalese

Part II.

(a) History of Indian Music.
Theory of Indian Music including prescribed books.

(b) One of the following special subjects:—

(1) Comparative Study of Indian and Western Music.

(2) Comparative Study of South Indian and North Indian Music.

(3) Srutis.

(4) Evolution of Scales and Ragas.

(5) Evolution of Compositional Types.

Part III.

(1) Vocal and (2) one out of Veena, Violin, Flute, Gotuvadyam and Nagasvaram.

(One to the main standard and the other to the subsidiary standard).

Scheme of Examination.

13. (a) *Part I—Language*:—The examination shall be a written one and the scheme of examination and of marks shall be the same as for Part I of the B.Sc. (Pass) Degree Examination (*vide* Regulation 3 of Chapter XLIX).

(b) *Part II*—There shall be one paper on the History of Indian Music, two papers on the Theory of Indian Music including prescribed text-books, and one paper in the special subject.

(c) *Part III*—There shall be practical tests both in the main and in the subsidiary subjects.

The scheme of examination for Parts II and III shall be as follows:—

Part II.

Subjects.	*Hours.*	*Marks.*
(a) History of Indian Music ...	3	100
Theory of Indian Music I (including prescribed text-books) ...	3	100
Theory of Indian Music II (including prescribed text-books)	3	100
(b) Special Subject ...	3	100
Total ...		400

Part III.

Practical (Main) I	100
Practical (Main) II	100
Practical (Subsidiary)	100
Total ...	300
Grand Total ...	700

Eligibility for the Degree.

14. A candidate shall not be eligible for the Degree of Indian Music unless he has passed the examination in a language under Part I, the examination in the subjects under Part II, and the practical tests under Part III.

Marks qualifying for a pass.

A candidate shall be declared to have passed Part I of the examination if he obtains not less than 40 per cent of the marks in that part; a candidate shall be declared to have passed Part II of the examination if he obtains not less than 40 per cent of the marks in that part; and a candidate shall be declared to have passed Part III of the examination if he obtains not less than 40 per cent of the marks in that part.

Classification of successful candidates.

Successful candidates in Part I shall be arranged in three classes:—the first consisting of those who obtain not less than 60 per cent, the second of those who obtain less than 60 per cent and not less than 50 per cent, and the third of those who obtain less than 50 per cent.

Successful candidates in Parts II and III at the same examination shall be arranged in three classes:—the first consisting of those who obtain not less than 60 per cent of the total marks for both the parts together, the second of those who obtain less than 60 per cent and not less than 50 per cent, and the third of those who obtain less than 50 per cent.

15. A candidate for the B. Mus. Degree Examination may present himself for Part I at the end of the first year of the course and thereafter may present himself for the whole or for any of the parts at any one time.

16. No candidate shall be admitted to Parts II and III of the examination for the B. Mus. Degree until the end of the second year course and unless he presents himself for Part I of the examination or has already presented himself for Part I.

APPENDIX I.

MATRICULATION EXAMINATION.

Syllabus and Text-books.

MATHEMATICS.

(a) Arithmetic.—The principles and processes of Arithmetic applied to whole numbers and vulgar and decimal fractions. The metric system. Approximations to a specified degree. Contracted methods of multiplication and division of decimals. Practice, ratio and proportion. Square and cubic measure. Direct applications of the term *per cent* including interest, present-worth and discount, stocks and shares, profit and loss, exchange, square root.

(b) Algebra.—Symbolical expression of general results in Arithmetic. Algebraical laws and principles and their applications. Factorization of simple functions. Equations, conditional and identical. Equations of the first degree in one, two and three variables and the principles involved in their solution. Solution of problems by means of such equations. Equations of the second degree in one variable and the principles involved in their solution. Theory of positive integral indices. Square root. Graphs of simple algebraic functions.

(c) Geometry—Experimental.—Construction of lines, angles, circles, perpendiculars, parallels, tangents, chords, triangles and regular polygons from given data. Division of lines in given ratios. Bisection of angles. Graphical extraction of arithmetical square roots.

Theoretical.—Angles at a point. Parallel straight lines. Triangles and rectilinear figures. Areas, simple loci. Elementary propositions on circles. Proofs of the constructions in Experimental Geometry. Easy deductions.

Detailed Syllabus in Theoretical Geometry.

Angles at a point.—If a straight line stands on another straight line, the sum of the two angles so formed is equal to two right angles and the converse.

If two straight lines intersect, the vertically opposite angles are equal.

Parallel straight lines.—When a straight line cuts two other straight lines, if

(i) a pair of alternate angles are equal, or

(ii) a pair of corresponding angles are equal, or

(iii) a pair of interior angles on the same side of the cutting line are together equal to two right-angles, then the two straight lines are parallel; and the converse.

Straight lines which are parallel to the same straight line are parallel to one another.

Triangles and rectilinear figures.—The sum of the angles of a triangle is equal to two right angles.

If the sides of a convex polygon are produced in order, the sum of the angles so formed is equal to four right angles.

If two triangles have two sides of the one equal to two sides of the other, each to each, and also the angles contained by those sides equal, the triangles are congruent.

If two triangles have two angles of the one equal to two angles of the other, each to each, and also one side of the one equal to the corresponding side of the other, the triangles are congruent.

If two sides of a triangle are equal, the angles opposite to these sides are equal; and the converse.

If two triangles have the three sides of the one equal to the three sides of the other, each to each, the triangles are congruent.

If two right-angled triangles have their hypotenuses equal, and one side of the one equal to one side of the other, the triangles are congruent.

If two sides of a triangle are unequal, the greater side has the greater angle opposite to it; and the converse.

Of all the straight lines that can be drawn to a given straight line from a given point outside it, the perpendicular is the shortest.

The opposite sides and angles of a parallelogram are equal; each diagonal bisects the parallelogram, and the diagonals bisect one another.

If there are three or more parallel straight lines, and the intercepts made by them on any straight line that cuts them are equal, then the intercepts made by them on any other straight line that cuts them are also equal.

Areas.—Parallelograms of the same altitude on the same or equal bases are equal in area.

Triangles of the same altitude on the same or equal bases are equal in area.

Equal triangles on the same or equal bases are of the same altitude.

Illustrations and explanations of the geometrical theorems corresponding to the following algebraical identities:—

$$k(a+b+c+\ldots)=ka+kb+kc+\ldots,$$
$$(a+b)^2=a^2+2ab+b^2,$$
$$(a-b)^2=a^2-2ab+b^2,$$
$$a^2-b^2=(a+b)\ (a-b),$$
$$(a+b)^2-(a-b)^2=4ab,$$
$$(a+b)^2+(a-b)^2=2a^2+2b^2.$$

The square on a side of a triangle is greater than, equal to or less than the sum of the squares on the other two sides, according as the angle contained by those sides is obtuse, right or acute. The difference in the cases of inequality is twice the rectangle contained by one of the two sides and the projection on it of the other.

Loci.—The locus of a point which is equidistant from two fixed points is the perpendicular bisector of the straight line joining the two fixed points.

The locus of a point which is equidistant from two intersecting straight lines consists of the pair of straight lines which bisect the angles between the two given lines.

The locus of the vertices of all triangles which have the same base and the sum of the squares of their sides equal to a given square is a circle having its centre at the middle point of the base.

The locus of the vertices of all the triangles which have the same base and the difference of the squares of their sides equal to a given square is a straight line perpendicular to the base.

The locus of the vertices of all the triangles which have the same base and their vertical angles equal to a given angle is the arc of a segment of a circle.

The Circle.—A straight line drawn from the centre of a circle to bisect a chord which is not a diameter, is at right angles to the chord; conversely, the perpendicular to a chord from the centre bisects the chord.

There is one circle and one only, which passes through three given points not in a straight line.

In equal circles (or, in the same circle) (i) if two arcs subtend equal angles at the centres, they are equal; (ii) conversely, if two arcs are equal, they subtend equal angles at the centres.

In equal circles (or, in the same circle) (i) if two chords are equal, they cut off equal arcs; (ii) conversely, if two arcs are equal, the chords of the arcs are equal.

Equal chords of a circle are equidistant from the centre; and the converse.

The tangent at any point of a circle and the radius through the point are perpendicular to one another.

If two circles touch, the point of contact lies on the straight line through the centres.

The angle which an arc of a circle subtends at the centre is double that which it subtends at any point on the remaining part of the circumference.

Angles in the same segment of a circle are equal; and if the line joining two points subtends equal angles at two other points on the same side of it, the four points lie on a circle.

The angle in a semi-circle is a right angle: the angle in a segment greater than a semi-circle is less than a right angle; and the angle in a segment less than a semi-circle is greater than a right angle.

The opposite angles of any quadrilateral inscribed in a circle are supplementary; and the converse.

If a straight line touch a circle, and from the point of contact a chord be drawn, the angles which the chord marks with the tangent are equal to the angles in the alternate segments.

If two chords of a circle intersect either inside or outside the circle, the rectangle contained by the parts of the one is equal to the rectangle contained by the parts of the other; and the converse.

ELEMENTARY SCIENCE: (1) PHYSICS, (2) CHEMISTRY.

The examination shall test whether the subjects included in the following syllabus have been taught by the aid of experimental demonstrations—wherever this is possible. The application of physical and chemical facts and principles to experience in ordinary life should receive particular attention.

It is desirable that, as far as the accommodation and equipment of the school will allow, pupils receive practical instruction in the physical and chemical processes included in the syllabus.

1. *Physics.*—Measurement of length. Meaning of a unit and the measurement of a physical quantity. British and metric units; their multiples and sub-multiples. Derived units of area and volume. Measurement of area and volume.

Measurement of time: Unit of time. Rotation of the earth. Measurement by simple pendulum.

Speed: its measurement involving length and time; calculation of speed in given cases. Elementary ideas regarding acceleration. Illustration of First Law of Motion; definition of force.

Matter: Definitions. Measurement of mass. British and metric units. Determination of mass by the spring balance, and by the ordinary balance. Density and specific gravity.

Gravitation: All matter attracted by the earth; illustration of Second Law of Motion: attraction is mutual: illlustration of Third Law of Motion. Universality of gravitation. Weight of a body. Distinction between mass and weight.

Properties of matter: Extension, inertia, gravitation, divisibility, porosity, hardness, elasticity, transparency and opacity, ductility, malleability, brittleness, plasticity, viscosity. The three states of matter. Changes of state produced by heating and cooling. Permanent and temporary effects of heating different substances: effects on organic substances: tempering of metals.

Simple machines: The lever; its general principle and application to the common balance. The wheel and axle. The pulley. The inclined plane. Application of the screw.

Centre of gravity: definition. Experimental determination of centre of gravity in simple cases. Condition of equilibrium of a body resting in a given position; stable, unstable and neutral equilibria. The common balance; how mass is measured by weighing.

Solids: permanence of shape and volume which are only altered by application of forces.

Liquids: no permanent shape. Surface of liquid at rest horizontal. Definition of pressure and its evaluation; it acts in all directions equally, and is greater at greater depths. Transmission of pressure. The Bramah Press. The principle of Archimedes; its experimental proof and applications.

Gases: how distinguished from liquids. Gases have weight. Balloons. Pressure of the atmosphere; the mercury barometer; variation of atmospheric pressure with height proved by mercury barometer; the water barometer. Evaluation of pressure of atmosphere by means of barometer. Applications. Air-pump. Water pump. Pressure of gas: Boyle's Law.

Temperature: Liquids expand by heat; the special case of water. Thermometer used for measuring temperature by observing change of volume of liquid. The mercury thermometer; method of graduating; determination of fixed points; fundamental interval; the Centigrade and Fahrenheit scales. Thermal expansion of solids, liquids and gases.

Distinction between heat and temperature. Heat as a quantity and how it may be measured; the thermal unit. Specific heat.

Changes of physical state due to heat. Fusion and the latent heat of fusion; evaporation and ebullition and the latent heat of vaporization. Water vapour present in the atmosphere and determination of its amount. Cooling produced by solution and evaporation; freezing mixtures. The conduction and convection of heat; convection currents in the atmosphere and ocean; the trade winds; land and sea breezes; the gulf stream. The circulation of water vapour in the atmosphere; clouds, rain.

Light: Rectilinear transmission. Rays and pencils of light; shadows produced by different sources, and images of sources produced by pin-holes. The laws of reflection of rays of light; reflection of pencils by plane mirrors and images formed by plane mirrors. Direct reflection of pencils from concave spherical mirrors; experimental proof of law of distances. The laws of refraction of rays of light; refraction of rays through a plate and a prism. Refraction through a convex lens; experimental proof of law of distances; the principal focus of a lens. Image formed by a convex lens; the simple microscope; the photographic camera; the telescope. Analysis of white light by a prism; the method of producing, and order of colours in the spectrum. The spectra of sun-light, and of candle light. Recombination of the colours of the spectrum into white light.

Electrification by friction: positive and negative electrification. Laws of attraction and repulsion. Conductors and non-conductors. Simple voltaic cell; Grove's cell. Electric current. Magnetic effects of currents in straight and coiled wires. Simple galvanometer. Heating effects of currents. Simple facts of electrolysis.

Magnetic substances: Laws of magnetic attraction and repulsion. Magnetic induction. Methods of magnetization.

Graphic representation on squared paper of the relation between two of the physical quantities referred to in the syllabus.

2. *Chemistry.*—Examples of mixtures and solutions: (1) sand and sugar, (2) sulphur and iron filings, (3) sand and salammoniac, (4) copper sulphate and water. Explanation of the processes of separating the ingredients of these mixtures; filtration, decantation, mechanical or magnetic separation, evaporation, distillation, sublimation.

Chemical compounds. Characteristic differences between compounds and mixtures; illustrations.

Chemical combination illustrated by (1) candle burning in air, (2) sulphur burning in air, (3) magnesium wire burning in air, (4) quick-lime combining with water.

Chemical decomposition illustrated by (1) heating mercuric oxide, (2) action of sodium on water, (3) heating potassium chlorate (4) heating lead nitrate.

Iron in contact with air and water is converted into rust. Rusting is oxidation. Copper, lead, mercury, magnesium, sulphur and phosphorus also oxidize, but their oxidation takes place at different temperatures. Rapid oxidation. Combustion of candle; the products of combustion are heavier than the candle itself. One of these products is a gas which turns lime water milky and it is the same product which is obtained when charcoal burns in air. Water is another product of the combustion. Similar observations may be made and similar conclusions deduced when oil burns in air. Structure of a candle flame.

The rust or oxide is always heavier than the substance from which it is formed. When a substance (*e.g.*, iron or phosphorus) oxidizes in a confined volume of air, about one-fifth of the air ultimately disappears; remaining air is inactive (*e.g.*, candle will not burn in it.) Composition of air; air has two components: active (oxygen) and inactive (nitrogen)

Oxygen: its discovery; its mode of preparation and properties. Oxides; products formed when a candle, charcoal, sulphur, phosphorus, sodium or iron burns in oxygen. Burning in oxygen and air compared. Illustration of acid and alkaline properties.

Hydrogen produced by the action of sodium on water. Products of the decomposition. Same gas is produced when dilute sulphuric or hydrochloric acid acts on zinc, or on iron. Properties of hydrogen, its density and its cumbustion with air or oxygen. Water the sole product of their combustion.

Elements and compounds: Two ways of determining the composition of compounds: (i) by synthesis, (ii) by analysis; illustrated by the case of water. Synthesis of water (i) by burning hydrogen in air or oxygen, (ii) by passing hydrogen over heated copper oxide. Analysis or decomposition (i) by action of sodium on water, (ii) by passing steam over red-hot iron filings, and (iii) by electric current. Composition of water by weight and by volume. Constancy of composition of chemical compounds illustrated by the case of water. Solvent action of water: crystallization, forms of crystals, water of crystallization. Solubility of gases in water: carbonic acid gas, air, and oxygen. Soda-water, spring, river, well, and sea-water. Suspended and dissolved impurities. Purification by distillation. Extraction of salt from sea-water by evaporation: salt pans.

Carbon: the different forms in which it occurs, their properties and uses. Carbon burnt in air or oxygen produces carbon dioxide. This gas is always formed when candle, oil, etc., burn: its preparation and properties. Action on lime- water. Exhaled by living animals; action of plants on carbon dioxide. Solution of carbon dioxide in water and properties of the solution. Hard and soft water; permanent and temporary hardness. Methods of softening hard water.

Nitrogen, the inactive constituent of air: preparation and properties. Two of its important compounds, *viz.*, nitric acid and ammonia.

(*a*) Nitric acid; its preparation from nitre and sulphuric acid. Its properties; power of dissolving copper and mercury and many other

metals. Relations between acids, bases and salts illustrated by (1) nitric acid and caustic soda, (2) magnesium oxide and sulphuric acid, (3) lime and hydrochloric acid.

(b) Ammonia; its preparation and properties. Solubility in water; power of neutralizing acids and forming salts, such as, ammonium chloride and nitrate; behaviour of these salts on heating.

Hydrochloric acid and chlorine. Treatment of common salt with sulphuric acid and production of hydrochloric acid gas. Properties of this gas; solubility in water. Production of chlorine from hydrochloric acid and manganese dioxide. Its properties; its power of combining with hydrogen and with metals, such as, antimony, to form chlorides. Bleaching action of chlorine.

Sulphur: the different forms; their properties. The changes induced by heat—when burnt in air or oxygen, produces sulphur dioxide. Sulphuric acid gas—its properties and uses.

Phosphorus: the different forms, their properties and uses.

Silicon: occurrence in nature, chief compound, silica. Occurrence of silica in nature, free and combined as silicates. Chief forms of silica, quartz, sandstone, flint.

Metals and non-metals, their general properties.

Sodium and potassium: their occurrence and properties. Distinguishing properties of the alkali metals; their more important compounds; common salt, Glauber's salt, washing soda, sodium bicarbonate, caustic soda, potassium carbonate, potassium chlorate, caustic potash, saltpetre, potassium permanganate. Gun-powder.

Calcium: chief compoud, calcium carbonate. Its occurrence in various forms. Limestone burnt into lime in limekilns. Slaked lime. The use of lime in making mortar and plaster. Calcium sulphate; gypsum and Plaster of Paris.

The occurrence, general method of preparation, properties and uses of the following metals:—

Zinc, iron, copper, mercury, lead and silver. Their chief oxides and their salts which have been used or produced in experiments and illustrations included in the above syllabus.

MOVEMENTS IN HISTORY AND HISTORY OF INDIA.

One of the topics in "Movements in History" and one period in "History of India" will be prescribed each year.

MOVEMENTS IN HISTORY.

Topics.

(1) The Growth of British Empire and Commonwealth.

(2) The Rise and Growth of the United States of America.

(3) The Labour Movements in Modern Times.

(4) International Co-operation.

HISTORY OF INDIA.

Special Period Portion.

(1) Early Indian History from the rise of Buddhism to 1206 A.D.

(2) The Moghul Empire, 1526—1707.

(3) The British in India, 1600—1805.

(4) The Modern Period, 1805—1935.

NOTE:—Books will be recommended from year to year when the special periods are prescribed.

GEOGRAPHY.

I.—Southern Continents.

Australia.

1. Relief and Rivers of Australia.

2. Climate of Australia. The seasonal distribution of temperature and rainfall.

3. Vegetation and animals; relation between rainfall and natural vegetation regions of Australia; peculiarity of its animal life.

4. Life and work of the people with special reference to (*a*) East Coast Region, (*b*) Murray-Darling Basin, (*c*) Mediterranean regions of West Australia and Victoria.

5. Favourable position for trading with lands around the Pacific and Indian Oceans.

Africa.

6. Structure—effect upon the coastline, rivers and lakes of Africa, relief and drainage.

7. Climate and vegetation of Africa; apparent seasonal migration of the sun and the duplication of climatic and vegetation belts North and South of the Equator.

8. Chief Natural Regions of Africa.

9. Peoples of Africa.

10. Trade routes of the Indian Ocean.

South America.

11. Structure and relief; rivers.

12. Climate and Vegetation of South America; the effect of a mountain barrier, of a cold current and of altitude upon rainfall and temperature; Andean Zones.

13. Peoples and States of South America; the importance of minerals in the past and present development of the continent.

14. Temperate countries of South America—Argentina, Uruguay and Chile.

15. Tropical countries of South America—Brazil—the world's chief storehouse of tropical products.

16. Revision of the three southern continents.

II.—North America.

1. Structure and relief; the work of rivers as illustrated on a large scale by the Colorado and the Mississippi and as seen by actual observation of local streams.

2. Climate and vegetation; factors that modify climate as evidenced in north America; natural regions of North America.

3. Population and political divisions; Immigration.

4. *United States*—

(a) North-eastern industrial and commercial region.

(b) South-eastern plantation region.

(c) Central farming region.

(d) The basins and mining regions of the Rockies.

(e) Pacific shorelands—fruit, grain, timber and minerals

5. *Dominion of Canada and New Foundland—*

(a) Eastern Canada—agriculture, dairying, timber, fisheries, mining and manufacture.

(b) Prairie provinces.

(c) British Columbia.

6. Mexico, Central America and West Indies.

7. Transport and communication of North America and important links in round-the-world routes.

III.—Eurasia and India.

1. Surface, relief and rivers of Eurasia.

2. Climate of Eurasia; the major climatic regions, comparison of temperature conditions on east and west margins; effect of latitude and distance from the sea on range of temperature, causes of monsoons and their effect on climate of South-east Eurasia.

3. British Isles; relief; influence of the sea and the climate upon the life and activities of the people; fisheries and farming; the chief industrial regions and their outlets.

4. Western Mainland of Europe.—France—agriculture and industry; position of Paris and Marseilles. Belgium—plain of Flanders and the Sambre-Meuse Valley. Holland—a delta land reclaimed from the sea; its colonies and sea trade. Denmark—co-operative dairy farming. Germany—plain and plateau, forestry and development of special industries; industries of the Ruhr and Saxon coalfields.

5. Baltic Region—the new border states. Scandinavian peninsula—forestry and woodwork of Sweden.

6. Central Highlands of Europe: Czecho-Slovakia—its minerals and industries; agriculture of the Mid-Danubian plain. Alpine region—development of hydro-electric power and effect on industrial development.

7. Mediterranean region—influence of climate on plant adaptation and fruit-culture. Spain—its mineral wealth but lack of coal. Italy—alluvial plain of Lombardy and its industrial development—peninsular Italy.

8. South-western lands of Asia—region of plateau and deserts with one important alluvial plain; its historical importance as a highway.

9. Central and Northern Eurasia—rich wheat and pasture lands of Rumanian and Russian plains—desert conditions of the Aral Sea.

Basin; tundra, taiga and steppe of Siberian plain, contrast development of this region with similar region in North America.

10. China—her dependencies. Effect of climate and relief upon occupations and industries.

11. Japan. A mountainous country, yet productive; agricultural, mineral and industrial development—importance of Korea.

12. South-east Asia and the East Indies.

13. Position, relief, soils and minerals of India and Burma.

14. Climate of India; her chief climatic regions, means of irrigation.

15. Vegetation and animal life of India.

16. Peoples of the Indian Empire.

17. Survey of the Provinces and States—

(a) Mountain States.
(b) Great Plain.
(c) Plateau states and provinces.
(d) Madras.
(e) Bombay.

18. Occupations and Industries of India.

19. Trade, transport and seaports.

20. Ceylon.

IV.—The World.

1. Studies in climate—size and shape of the earth—movements of the earth, day and night, the seasons, annual and seasonal distribution of temperature, pressure, winds and rainfall, ocean currents, natural vegetation.

2. Regions of the world—

(1) Tundra and Ice-cap.
(2) The Cold Forests.
(3) Broad-leaved Forests.
(4) Temperate Grasslands.
(5) Mediterranean Lands.
(6) Desert Lands.

(7) Equatorial Forests and Tropical Grasslands.
(8) Monsoon Lands.
(9) Islands of the Pacific.
(10) High Mountain and Plateau.
(11) Industrial Regions of Europe.
(12) Industrial Regions of North America.
(13) Regions of the Empire.

Books recommended.

Text-Books—

(1) The New Regional Geographies—Book IV, The World, Leonard Books; London University Press.

(2) Any one of the following:—

(a) India, World and Empire, Herbert Pickles; Oxford University Press.

(b) Our World, Morrison; Macmillan.

(c) இந்திய ராஜ்யம் சிம்மளம், Morrison and Subrahmanyam; Macmillan.

(d) A Secondary School Geography by Dudley Stamp (Longmans, Green & Co).

(3) The following Atlases are recommended:—
Longmans Senior Atlas or the Taj Mahal Atlas, (Longmans, Green & Co.).

Reference Books.—

(1) Physiography, Herbertson; Oxford University Press.

(2) Every one's Book of the Weather, Franco Williams, Sheldon Press.

(3) Out-door Geography, Hatch; Blackie.

(4) Surface of the Earth, Pickles; Cambridge University Press.

(5) Human Geography for Secondary Schools, Fairgrieve and Young; G. Philip & Son.

(6) A Graded Course of Geography, E. S. Price; G. Philip & Son.

(7) The Rambler Travel Books; Blackie.

(8) The World, Howarth & Bridewell; Oxford University Press.

Text-Books for the Examination of 1949.

ENGLISH.

1949.

Selections for the S.S.L.C. Examination, 1949.

Non-detailed :—

I Set :

(1) The Hound of Baskervilles by Sir A. Conan Doyle (abridged and edited by Mr. B. M. Chester), Oxford University Press, Mount Road, Madras.

or

(2) The Story of Jean Valjean edited by the Rev. D. Thambuswami, Kaviraj Publishers, Chirala (Guntur district).

II Set :

(3) Stories of Adventure edited by Ramanathan, National Publishing Company, Kondi Chetty Street, George Town, Madras.

or

(4) Modern Stories of East and West edited by R. K. Laghu, (Special Edition), Macmillan and Company, Limited, Mount Road, Madras.

SANSKRIT.

1949.

Selections for the S.S.L.C. Examination, 1949.

MARATHI.

1949.

Prose.—Nava Pratab Kal by V. S. Khandekar.

Poetry.—The following extracts from *Navanit* :—

Moropant : Vanaparvantil Savitrichen Akhyan.

Vaman Pandit : Vanasudha ani Rukmini Patrika.

Composition.—Nibandha Lekhan by G. V. Bhide.

Grammar—Marathi Vyakarnachi Mul Tatven by G. H. Kelkar.

HINDI.

1949.

The same as for the S.S.L.C. Examination, 1949 *viz.*,

Detailed :

Rashtra Bhasha Sangrah, Part III (whole) Dakhina Bharat Hindi Prachar Sabha, Tyagarayanagar, Madras.

NOTE.—Poems Nos. 1 to 11 are prescribed for committing to memory.

Non-detailed :

(1) Arjun ... ... } Dakshina Bharat Hindi Prachar Sabha, Tyagarayanagar, Madras.
(2) Ithihasik Kahaniyan ... }

BENGALI.

1949

Bengali Selections (latest) (Calcutta University).

Books prescribed for rapid reading :—

1. Atul Chandra Ghatak—Ashutosher Cjjatrajiban.
2. Rabindranath Tagore—Visva Parichaya.

Books on Grammar :—

1. Suniti Kumar Chatterji—Bengali Self-taught.
2. Mahammad Sahidulla—Bangla Vyakaran.

LATIN.

1949.

Caesar : De Bello Gallico, Book I, Chapter 31 to the end.

Ovid : Metamorphoses, Book I.

FRENCH.

Watson Bain's French Poetry for Beginners (Macmillan), Nos. 1 to 20 inclusive.

Le Petit Louis by Henri Pauthier (University Tutorial Press).

HEBREW.

1949.

Psalms, I to XII.

Genesis, XXXVIII to L.

Grammar.—Students' Hebrew Grammar—By Michael Adler, B.A. David Nutt, London.

SYRIAC.

1949.

1. The Gospel of St. Matthew (Chapters I—V).

2. Syriac Grammar by Fr. Cabriel, T.O.C.D. (St. Joseph's Press, Mannanam, Travancore).

3. Paradigms and Exercises in Syriac by T. H. Robinson. (Clarendon Press, Oxford).

ARABIC

1949.

For detailed study.

The same as for the S.S.L.C. Examination of 1949, *viz*:—

Sulamul Adab (Madina Press Book Depot, Triplicane, Madras). The following portions are prescribed for study:—

Prose: Pages 21 to 59: Poetry: Pages 60 to 80. Complete poems on pages 70 to 73 are prescribed for committing to memory.

PERSIAN.

1949.

The same as for the S.S.L.C. Examination of 1949.

URDU.

1949.

For detailed study.

The same as for the S.S.L.C. Examination of 1949.

Non-detailed:

(1) Sanjog by Rashidal Khayri.
(2) Satwanti by Rashidal Khayri.
} Available with Madina Press Book Depot, High Road, Triplicane, Madras.

TAMIL

1949.

The same as for the S.S.L.C. Examination, 1949, *viz.*,

Detailed: Selections for the S.S.L.C. Examination.

Non-detailed:

I Set:

(1) Palam Tamil Pulavar by Vidvan K. Nainar Muhammad, Palaniappa Brothers, Teppakulam Post, Trichinopoly.

or

(2) Tonral Ariyanayakam by Vidvan A. Natesan, Avvai Publishing House, 87, Bazaar Street, Saidapet, Madras.

II Set:

(3) Mallaya Nadu by Srimathy T. Padmavathi Ammal, Lalitha Vilas Book Depot, Triplicane, Madras.

or

(4) Arunkalai Selvar by Pandit V. Lakshminarasimhan, E. M. Gopalakrishna Kone, Book-Sellers, Madura.

TELUGU.

1949.

The same as for the S.S.L.C. Examination of 1949, *viz.*,

Detailed: Selections for the S.S.L.C. Examination.

Non-detailed:

I Set:

(1) Meenambika by P. Ganapathi Sastry, Rowthu Book Depot, Rajahmundry.

or

(2) Chittooru Durgamu by P. Govinda Rao and B. V. Ramanayya, R. Venkateshwar and Company, Loane Square, Madras.

II Set:

(3) Eruvaka by P. Seshagiri Rao, Rao Brothers, Tenali (Guntur District).

or

(4) Pushpanjali by Y. Kutumba Rao, Modern Publishers Tenali (Guntur District).

KANNADA.

1949.

The same as for the S.S.L.C. Examination, 1949, *viz.*,

Detailed: Selections for the S.S.L.C. Examination.

Non-detailed:

(1) Gadayuddha Kathe by M. N. Kamath (U. R. Shenoi & Sons, Mangalore).

(2) Namma Hindusthana (Oxford University Press, Mount Road, Madras).

MALAYALAM.

1949.

The same as for the S.S.L.C. Examination, 1949, *viz.*,

Detailed: Selections for the S.S.L.C. Examination.

Non-detailed:

(1) Letters to his Daughter by Nehru—Translated by Ambadi Ikkavu Amma (Mathrubhumi Publishing Company, Limited, Calicut).

2 Ithihyamala, Part II by Kavithilakan Kottarathil Sankunni (Special edition containing first seventeen stories only). The Mangalodayam Press, Limited, Trichur.

MOVEMENTS IN HISTORY AND HISTORY OF INDIA.

1949.

The following Topic in "Movements in History" and Special Period in "History of India" are prescribed for the Matriculation Examination of 1949 :—

MOVEMENTS IN HISTORY.

The Growth of the British Empire and Commonwealth.

The following is the detailed syllabus for the above topic:—

1. *Introduction.*—The British Empire in the middle of the 18th century result of mixed motives—Gold, religion, plantation, colonization and conquest.

2. *The Old Colonial System.*—Economic constitutional and political features that led to the struggle between the Mother Country and the Thirteen Colonies—Causes for American success and the end of the first Empire.

3. *Colonial endeavours in the East.*—Discovery of Australia and New Zealand. The Flag follows trade in India—Clive and Warren Hastings.

4. *The British Empire after the French Wars.*—New additions to Empire from France, Spain and Holland after 1815—Britain's control of the seas—Expansion of British rule in India—Wellesley and Lord Hastings.

5. *The effects of the Industrial Revolution on the development of the British Empire.*—The rise of the Factory System—Rapid means of

communications, mass production, need for raw materials and markets. Britain the workshop of the world—Unemployment and increase of population leading to emigration.

6. *The New Colonial System.*—Democratization of the English constitution, the Humanitarian movement—Free Trade policy—Change in the attitude of Britain towards Colonies and Dependencies.

7. *Canada.*—The growth of Canada—Durham's Report—Responsible Government—Federation, 1867—Expansion westward—The Canadian Pacific Railway—The growing importance of Canada.

8. *Australia and New Zealand.*—Exploration—Settlements—The gold rush—From Representative to Responsible Government—Commonwealth of Australia—White Australia policy—New Zealand and Self-Government—Importance of these areas for dairying, wool, meat and fruit—Cold storage—Problems of the Pacific.

9. *South Africa.*—The Dutch and the English settlers—Successive treks—Annexation of Natal—Boer Republics of Orange River and the Transvaal—The discovery of diamonds and gold—Cecil Rhodes—The South African War—Responsible Government—The Union of South Africa—The problem of the Native and Asiatic peoples.

10. *Struggle among the European Nations for raw materials and markets in the Far East and the Near East.*—Burma, Malaya and the Islands in the Pacific—Egypt and the Suez Canal—The grab for tropical East and West Africa—the Sudan—Spheres of Influence in the Middle East—Importance of this region.

11. *India.*—India under Bentinck and Dalhousie—India under the Crown—Progress in the Constitution, Acts of 1861, 1892, 1909, 1919 and 1935.

12. *The Empire and the Commonwealth.*—Gradual growth of Imperial unity—Colonial and Imperial Conferences—War of 1914-18—Unity of Britain and the Empire—Participation of the Dominions and India in Peace Treaties and the League of Nations—Balfour Declaration and the Statute of Westminster, 1931. The implications of Dominion Status. The British Empire—Its component parts and her status.

13. *Need for common action in defence.*—Insecurity of different parts of the Empire exposed by the Tripartite Treaty of the Axis Powers—The World War II—Menace to the Empire by Italy's entry into the war (1940)—Japan's challenge in the Far East—Collaboration between U.S.A., Britain and Russia—Co-operation of Britain, the Dominions, India and dependant parts of the Empire in the Total and Global War—India's strategic position in the East—Allied success in the West and the East. Reaction of Asiatic and African peoples.

14. *Movement towards International Organization.*—The Triumph of Democracy—The San Francisco Conference. The UNO—The future of Imperialism—Cripps Mission and Cabinet Mission—The position of India.

15. *The future of Colonies and Dependencies.*—The Doctrine of Trusteeship—Transition to the ideal of Self-Government and Partnership.

Books:

For the pupil:—(1) Batten, T. R.—"The British Empire and the Modern World," Oxford University Press, Mount Road, Madras. (2) Newton. A Junior History of the British Empire; Overseas, Blackie and Son, Ltd., Thyagarayanagar, Madras.

For the teacher:—(1) Walker. Erie A—"The British Empire—Its Structure and Spirit". Oxford University Press, Mount Road, Madras. (2) Oxford Pamphlets on world affairs, Nos. 2, 29, 65 and 68. Oxford University Press, Mount Road, Madras. (3) S. Reed Brett "History of the British Empire" (Thomas Nelson & Co., Ltd.,), Essco, Ltd., No. 17, Mount Road, Madras. (4) The British Commonwealth and the World by Richard Frost. Royal Institute of International affairs.

NOTE.—Irrespective of the text books used the teacher should base his teaching not only on the matter contained in the text-book but also on the matter contained in the reference books.

HISTORY OF INDIA.

Period prescribed: "Modern Period"—(1805—1935).

Text-book recommended: An Advanced History of India, Part II (1805—1935) by Diwan Bahadur C. S. Srinivasachari (P. Varadachari & Co., No. 8, Linghi Chetty St., G.T., Madras.)

Text-books for the Examination of 1950.

ENGLISH, SANSKRIT, TAMIL, TELUGU, KANNADA AND MALAYALAM.

1950.

For detailed study: Selections prescribed for the S.S.L.C. Examination of 1950.

MARATHI.

1950.

The same as for 1949.

HINDI.

1950.

For detailed study : The same as for the S.S.L.C. Examination of 1950.

The books for non-detailed study in the various languages will be the same as for the S.S.L.C. Examination of the year, and will be notified in due course.

BENGALI.

1950.

The same as for 1949.

APPENDIX II.

INTERMEDIATE EXAMINATION IN ARTS AND SCIENCE.

Syllabuses and Text-books.

(1) MATHEMATICS.*

In addition to the subjects prescribed for the Matriculation, the course shall comprise Algebra, Plane Trigonometry, Geometry and Calculus. A candidate shall be required to be acquainted with the use of logarithmic tables and to be able to solve questions by graphic methods.

(a) *Algebra*:—Algebraical laws and principles and their applications, Ratio and Proportion. Theory of indices. Simple surds. Theory of the Equation and Expression of the second degree in one variable. The three progressions and other series whose summation depends on Arithmetic and Geometric series. Value of ^nP_r and ^nC_r (under Permutations and Combinations). The Binomial Theorem for a positive integral exponent. Elementary theory of logarithms and their applications to arithmetical computation. Problems on the above.

(b) *Plane Trigonometry*.—Measurement of angles. Trigonometrical functions and their relations to one another. Solution of simple trigonometrical euqations. Addition, multiplication and division formulae. Properties of triangles and of the circles connected with them (omitting distances between special points). Solution of Triangles. Application of logarithms to trigonometrical computations. Measurements of heights and distances.

(c) *Pure Geometry*.—(i) Experimental: Construction of scales and their use. Construction of similar figures. Construction of the circumscribed, inscribed, escribed circle of triangles and polygons. Construction from data of triangles and polygons and their division in any given ratio. Areas of polygons and problems relating thereto.

(ii) Theoretical: Ratio and Proportion. Similar figures. Concurrence and Collinearity. Properties of Triangles. Properties or circles. Loci. Proofs of the constructions in Experimental Geometry. Easy deductions.

(d) *Analytical Geometry*:—Cartesian rectangular co-ordinates of a point. Distance between two given points. Equation of a straight line, (1) in terms of its slope and the intercept made on the y—axis, (2) passing through a given point and having a

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* NOTE.—The First Paper will comprise 4 questions on Algebra, 2 on Analytical Geometry and 3 on Calculus: and the Second Paper will comprise 5 questions on Geometry and 4 questions on Trigonometry.

given slope, (3) passing through two given points. Co-ordinates of the points of intersection of two straight lines. Condition for parallelism and perpendicularity. Equation of a circle, given centre and radius.

(e) Calculus.—Graphical idea of a function. Idea of a limit (intuitive and not rigorous).

$$\underset{x \to a}{\text{Lt.}} \frac{x^n - a^n}{x - a} \text{ (n being a positive integer)}, \qquad \underset{x \to 0}{\text{Lt.}} \frac{\sin x}{x}$$

Definition of differential coefficient. Differential coefficient of a constant, x^n (n positive integer), cos x, sin x. Derivative of the sum of two functions. Derivative of the product of two functions. Derivative of a function of a function. Derivative of second order.

Geometrical interpretation of the derivative. Gradient of a curve. Equations of the tangent and normal. Graphical treatment of maxima and minima of functions of one variable. The following criteria to be obtained from graphical considerations only. (No proof required):

If $f'(a)=0$, $f''(a)<0$, then $f(a)$ is a maximum value of $f(x)$.

If $f'(a)=0$, $f''(a)>0$, then $f(a)$ is a minimum value of $f(x)$. Simple examples involving the above criteria.

Derivative as a rate-measure. Velocity and acceleration expressed as differential coefficients.

Integration regarded as the reverse of differentiation. Indefinite integrals. Easy applications to areas under plane curves. Easy application to volumes of simple solids of revolution, the generating curve not cutting the axis of revolution.

[Candidates are not expected to do any complicated differentiation nor will they be expected to integrate any functions other than polynomials, a cos bx, a sin bx, (*a*, *b*, constants).

DETAILED SYLLABUS IN THEORETICAL GEOMETRY.

N.B.—*The order in which the theorems are stated in this syllabus is not imposed as the sequence of their treatment.*

Ratio and Proportion.—Definition and elementary theorems connecting the antecedents and consequents.

A given straight line can be divided internally in a given ratio at one, and only one point; and externally at one, and only one point.

A straight line drawn parallel to one side of a triangle cuts the other two sides, or those sides produced, proportionally; and the converse.

If the vertical angle of a triangle is bisected internally or externally, the bisector divides the base internally or externally into segments which have the same ratio as the other sides of the triangle ; and the converse.

In equal circles, angles, whether at the centres or circumferences, have the same ratio as the arcs on which they stand.

Triangles and parallelogram of equal altitude are to one another as their bases.

If two triangles have one angle of the one equal to one angle of the other, their areas are proportional to the rectangles contained by the sides about the equal angles. Similarly for parallelograms having one angle of the one equal to one angle of the other.

Similar figures.—If two triangles are equiangular their corresponding sides are proportional ; and the converse.

If two triangles have one angle of the one equal to one angle of the other and the sides about these equal angles proportional, the triangles are similar.

Two triangles are similar, if the sides of the one are respectively parallel or perpendicular to the sides of the other.

If two triangles have two sides of the one proportional to two sides of the other, and an angle in each opposite one corresponding pair of these sides equal, the angles opposite the other pair are either equal or supplementary.

If from the right angle A of a right angled triangle ABC, AD is drawn perpendicular to BC, then (1) AD is the mean proportional between BD and DC, (2) BA is the mean proportional between BD and BC and (3) CA is the mean proportional between CB and CD.

If two triangles are similar, their corresponding lines (such as medians, altitudes, inradii, etc.) are to one another in the ratio of their corresponding sides.

Similar triangles are to one another as the squares on their corresponding sides.

Two similar polygons can be divided into the same number of triangles similar to each other and similarly placed ; and the converse.

The perimeters of two similar polygons are to each other as any corresponding sides.

Areas of similar polygons are proportional to the squares on corresponding sides.

Concurrence and Collinearity.—The use of signs as applied to lines, angles and areas. If two parallel lines are cut by three or more concurrent transversals, the corresponding segments are proportional; and the converse.

If X, Y, Z, are points in the sides BC, CA, AB of a triangle ABC, such that the perpendiculars to those sides at these points are concurrent, then

$$(BX^2-XC^2)+(CY^2-YA^2)+(AZ^2-ZB^2)=0;$$

or

$$BX^2+CY^2+AZ^2=CX^2+ZB^2+AY^2,$$

and the converse.

If any transversal meets the sides BC, CA, AB of a triangle in D E, F; then

$$AF.\ BD.\ CE=AE.\ CD.\ BF;$$

and conversely, if three points D, E, F, taken on the sides BC, CA, AB of a triangle satisfy the relation AF. BD. CE=AE. CD. BF, then D, E, F, are collinear.

If the lines joining any point to the vertices A, B, C of a triangle meet the opposite sides in D, E, F;

$$\text{then } AF.\ BD.\ CE=FB.\ DC.\ EA;$$

and conversely, if three points D, E, F, taken on the sides BC, CA, AB of a triangle satisfy the relation AF. BD. CE=FB. DC. EA., then AD, BE, CF are concurrent.

If two unequal similar figures are similarly placed, the lines joining the vertices of one to the corresponding vertices of the other are concurrent.

Properties of Triangles.—The three medians of a triangle meet in a point, and this point is a point of trisection of each median, and also of the line joining the circumcentre to the orthocentre.

If D is a point in the side BC of a triangle ABC, such that mBD=nDC, then

$$mAB^2+nAC^2=mBD^2+nDC^2+(m+n)\ AD^2.$$

The perpendiculars from the vertices of a triangle on the opposite sides meet in a point, and the distance of each vertex from the orthocentre is twice the perpendicular distance of the circumcentre from the side opposite to the vertex.

The circle through the middle points of the sides of a triangle passes also through the feet of the perpendiculars of the triangle and through the middle points of the three lines joining the orthocentre to the vertices of the triangle.

If a perpendicular drawn from the vertex to the base of a triangle is produced to meet the circumcircle, then the distance of this point of intersection from the base is equal to the distance of the orthocentre of the triangle from the base.

The feet of the perpendiculars drawn on the sides of a triangle from any point P on the circumcircle of that triangle are collinear.

The pedal line of P bisects the line joining P to the orthocentre of the triangle.

If the vertical angle of a triangle is bisected by a straight line which cuts the base, the rectangle contained by the sides of the triangle is equal to the rectangle contained by the segments of the base together with the square on the straight line which bisects the angle.

If from the vertical angle of a triangle a straight line is drawn perpendicular to the base the rectangle contained by the sides of the triangle is equal to the rectangle contained by the perpendicular and the diameter of the circle described about the triangle.

Properties of Circles.—The locus of the points of intersection of tangents drawn at the extremities of chords of a circle which pass through a fixed point, is a straight line.

If the polar of A passes through B, then the polar of B passes through A.

If P and Q are any two points in the plane of a circle whose centre is O, then OP bears to OQ the same ratio as the perpendicular from P on the polar of Q bears to the perpendicular from Q on the polar of P.

The locus of points from which the tangents to two given coplanar circles are equal is a line perpendicular to the line of centres.

In two circles, if any two parallel radii are drawn (one in each circle), the straight line joining their extremities cuts the line of centres in one or other of two fixed points called centres of similitude.

If through a centre of similitude of two circles, a line is drawn cutting the circles, the radii to a pair of corresponding points are parallel.

In a cyclic quadrilateral the rectangle contained by the diagonals is equal to the sum of the rectangles contained by the opposite sides.

Loci.—If O is a fixed point, and $OP \cdot OQ$ is constant, then as P moves on a straight line or circle, the locus of Q is a straight line or circle.

If A, B are fixed points, and P a variable point, such that the ratio of PA to PB is one of constant inequality; then the locus of Q is a circle.

Given the base and vertical angle of a triangle, find the locus of (1) its incentre, (2) orthocentre, (3) centroid, (4) excentres.

TYPES OF PROBLEMS IN CALCULUS WHICH DEFINE THE STANDARD.

1. Differentiate with respect to x:
   $x \sin x$, $\cos^2 x$

2. If $y = (2x-1)(3x^2+1)$, find $\frac{d^2y}{dx^2}$

3. If $y = a \cos nx + b \sin nx$, where a, b, n are constants,
   prove that $\frac{d^2y}{d^2x} + n^2y = 0$

4. Find the points on the curve $y = x^3 - 2x^2 + x$ at which the tangent is parallel to the x-axis.

5. Find the gradients of the curve $y = x^3 - 6x^2 + 11x^3 - 6$, at the points (1, 0), (2, 0), (3, 0).

6. Find the equation of the tangent to the curve $y = 3x^3 + 2x + 1$ at the point on it where $x = 1$.

7. A particle projected vertically upward rises s feet in t seconds, where $s = 80t - 16t^2$. What is the greatest height reached by the particle?

8. A rectangular sheet of metal is 8 ft. by 3 ft. Equal squares are cut off at each of the corners, and the flaps are then folded up to form an open rectangular box. Find the side of the squares cut off so as to make the volume of the rectangular box a maximum.

9. A stone thrown up in the air rises s feet in t seconds where $s = 50t - 16t^2$. What does $\frac{ds}{dt}$ represent? What is its value when $t = 1$? What is the meaning of a negative value of $\frac{ds}{dt}$?

10. Express in symbols using the notation of the differential coefficient:—

    (i) The rate of change of the area A sq. in. of a circle with respect to its radius r inches is proportional to r.

(ii) The angular velocity of a rotating body is proportional to the angle θ turned through t seconds after starting.

11. A particle has a uniform acceleration f in a straight line and covers a distance s in time t seconds, when its velocity is v. Find the relation between s and t, given that initially (when $t=0$) $s=0$ and $v=u$.

12. Find y in terms of x if $\frac{dy}{dx}=x^2$ and $y=1$ when $x=1$.

13. Find

$$\int (x^2+x+1)dx, \quad \int 2 \operatorname{Cos} 3x\, dx,$$

$$\int_0^{\frac{\pi}{2}} (\operatorname{Sin} x+\operatorname{Cos} x)\, dx.$$

14. Find the area bounded by the curve $x^2=4y$, the x—axis and the ordinate $x=h$.

15. Assuming that the circumference of a circle of radius r is $2\pi r$, but not assuming the formula for the area of a circle, prove that the area enclosed between two concentric circles of radius r and $r+\triangle r$ ($\triangle r>0$ and small) is approximately $2\pi r\triangle r$.

Deduce by integration that the area of the circle with radius r is πr^2.

16. Find the area enclosed by the x—axis and one arc of the curve $y=\sin x$.

17. A segment of height h is cut off from a sphere of radius a. Find the volume of the segment.

TYPES OF PROBLEMS IN ANALYTICAL GEOMETRY
WHICH DEFINE THE STANDARD

1. Show that the points (9, 3), (7,—1), (1,—1) are equidistant from the point (4, 3).

2. Find the gradients of the following lines and the intercepts mady by them on the y—axis:

i $y=3x+4$

ii $3a+5y-4=0$

3. Show that the lines $3x-4y+5=0$, $6x-8y+7=0$ are parallel.

4. Show that the lines $4x-5y+6=0$, $5x+4y-7=0$ cut at right angles.

5. Find the equation of the lines through (4, 5) making an angle of 60° with the x-axis.

6. Find the equation of the line through (4, 5) cutting off an intercept of $+3$ on the y-axis.

7. Find the equation of the line through (3, 2) and (2,—7). Find its slope.

8. Show that for all values of a the line $y-3=a(x-2)$ passes through a fixed point. What is a if the line passes through (4, 5).

9. Find the equation of the line through (2, 3) parallel to $2x-5y+14=0$. What is the equation of the line through (2, 3) perpendicular to $2x-5y+14=0$.

10. Show that the lines $3x+4y=13$, $2x-7y+1=0$, $5x-y=14$ are concurrent. Find the point of concurrence.

11. Find the mid-points of the sides of the triangle whose vertices are at (5, 3), (3, 8,), (4, 11). Find the equations of the medians.

12. Show that the points (3, 4), (0, 5), (−3, −4), (−5, 0) lie on a circle whose centre is the origin. What is the radius of the circle?

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(2) PHYSICS

Theory.

No question shall be asked which cannot be answered by simple mathematical methods.

The course shall include a more detailed study of the matter included in the Matriculation syllabus and in addition the following:—

Dynamics.—The units of length and time. Displacement, speed, velocity and acceleration of a particle moving in a straight line. Newton's laws of motion; the units of mass and force. Motion of a particle in a straight line under the action of a force in that line. Vertical motion under the action of gravity. Energy, work, power and their units, simple illustrations of the conservation of energy.

*Conditions of equilibrium of a body under three concurrent forces (the parallelogram law) and under parallel forces. Centre of gravity. Simple machines. The simple pendulum; determination of g.

Hydrostatics.—Pressure at a point in a fluid; definition and illustrations; transmissibility of pressure. Bramah Press. Evaluation of pressure at a point in a heavy fluid at rest; its uniformity in all directions. Resultant thrust in simple cases. The principle of Archimedes; floating bodies, and hydrometers. Applications to practical determination of density and specific gravity. The pressure of a gas and its determination; the barometer. Fortins and Aneroid Barometers. Boyle's Law. Air pumps and water pumps, gauges, mercury manometer and Bourdon gauge.

Heat.—Temperature and its measurement; the construction and graduation of thermometers. The thermal expansion of solids, liquids and gases and their accurate determination; the air thermometer. Heat as a quantity; the unit of heat. Specific heat and the more direct methods of calorimetry. Laws of fusion, evaporation and ebullition; latent heat. Vapour pressure and how it is measured; hygrometers. Regnault's and wet and dry bulbs. Conduction and convection of heat; thermal conductivity. Radiation; absorption and reflection; law of cooling. The dynamical equivalent of heat and its determination.

Light.—Photometry—Rumford, Bunsen and Joly's photometers. The experimental facts and laws of transmission, reflection and refraction of light; simple geometrical deductions from these, applicable to small direct pencils incident on plane and spherical surfaces, prisms and lenses. Applications to optical lantern, spectacle lenses, telescope and microscope. Total reflection. Dispersion of light; the spectrometer. Radiation and absorption spectra. Determination of refractive indices.

Magnetism.—Properties of magnets; poles. Laws of magnetic force; unit poles. Lines of force; uniform magnetic fields and experimental methods of comparing fields and magnetic moments by deflection magnetometer. The earth's magnetic field; the compass. Magnetic induction; the magnetic properties of iron and steel. Intensity of magnetisation.

* Simple Voltaic Cells—Static Electricity—Electrification by friction and induction. Conductors and insulators—gold leaf electroscope. Simple ideas of potential difference in an electro-static field Distribution of charge on conductors—action of points. the electrophorus—Simple ideas of capacity and condensers. The Leyden Jar.

Electricity.—The more common forms of primary cells and the actions that go on in the cells while producing current. The action of currents on magnets; galvanometers depending on such action—including suspended coil type. Metallic conductors and electrolytes;

N.B.—An asterisk* before a paragraph means that for the topics included only experimental proofs are required.

laws of electrolysis. Comparison of e.m.f.'s by the potentiometer. Ohm's Law. Simple methods of measuring current and resistance. Wheatstone's bridge. Heating effects of current; fuses and lamps; Joule's Law. The electro-magnet and its simpler applications. Simple ideas of electro-magnetic induction. Telephone, Microphone. Simple forms of alternating current generator and D. C. dynamo and motor.

Sound.—The production and propagation of sound; the velocity of sound in air and its determination. Nature of wave motion and sound waves. Frequency of vibration; pitch. Amplitude of vibration; loudness. The reflection of sound; echoes.

* Laws of Vibration of strings and air columns.

Practical.

1. Vernier Calipers (length, area and volume of solids).
2. Screw Gauge.
3. Spherometer.
4. Balance (Sensibility and Vibration method of weighing). Measurement of diameter of capillary tube (mercury thread method).
5. Simple pendulum (verification of laws and determination of g).
6. Specific gravities of liquids and solids (heavier and lighter than water, soluble and insoluble in water) using hydrostatic balance.
7. Specific gravity bottle. Specific gravities of liquids and of solids (soluble and insoluble in water).
8. U-tube and Hare's apparatus.
9. Nicholson's Hydrometer, Test tube float, Common hydrometer.
10. Fortin's Barometer; Boyle's law.
11. Parallelogram of forces, triangle of forces, Lami's theorem and Tangent law.
12. Law of parallel forces, verification of the conditions of equilibrium. Weight of a non-uniform bar, centre of gravity of an irregular lamina.
13. Inclined plane—Mechanical advantage when power acts parallel to the plane.
14. Fixed points of thermometer, linear expansion.

15. Apparent expansion of liquid (specific gravity bottle).

16. Expansion of air at constant pressure.

17. Expansion of air at constant volume.

18. Melting point—Cooling curve. Boiling point of liquid (J-tube method).

19. Dew point—Regnault's hygrometer, wet and dry bulb thermometers.

20. Specific heat of solids and liquids by the method of mixtures.

21. Latent heat of steam.

22. Latent heat of fusion of ice.

23. Newton's law of cooling, specific heat of a liquid—Comparison of radiating powers.

24. Photometers—Bunsen and Jolly.

25. Verification of laws of reflection—pin method including parallax method. Rotation of reflected ray on rotation of plane mirror (pin method).

26. Verification of laws of refraction—Refraction through a parallel slab of glass.

27. Direct refraction—Determination of refractive index of solids and liquids (parallax method).

28. Refraction through a prism—angle of prism—angle of minimum deviation (pin method).

29. Refractive index by critical angle—
(a) Glass prism. (b) Air cell.

30. Concave mirror—determination of focal length—u—v graph.

31. Convex lens—determination of focal length—u—v graph for convex lens only.

Concave lens—focal length by combination in contact with convex lens.

32. Arranging lenses to form telescope and microscope. Magnifying power of a telescope and simple microscope.

N.B.—An asterisk*before a paragraph means that for the topics included only experimental proofs are required.

33. Spectrometer—Angle of the prism and minimum deviation of a solid prism.

34. Mapping field—neutral points.

35. Deflection magnetometer—comparison of moments; verification of inverse square law.

36. Current by Tangent galvanometer, reduction factor.

37. Direct verification of Ohm's law (ammeter and voltmeter method). Resistances by metre bridge.

38. Comparison of E.M.Fs. by Potentiometer—Comparison of E.M.Fs. by tangent-galvanometer (sum and difference method).

39. Electrolysis—E.C.E. of copper.

40. Joule's Calorimeter—Determination of J.

41. Sonometer—Verification of laws of transverse vibrations.

42. Resonance—determination of velocity of sound in air.

The following experiments may be done in groups but should be recorded in the Laboratory note-books :—

1. Atwood's machine.
2. Systems of pulleys.
3. Saturation vapour pressure—variation with temperature.
4. Comparison of thermal conductivities.
5. Mechanical equivalent of heat (conical cup method).
6. Voltaic cell, Primary cells, grouping of cells.
7. Water Voltameter—E. C. E. of Hydrogen.

Books for Study—

The syllabus for the Intermediate Examination is *approximately* covered by one or more of the following books :—

Crowther, J. A. : Manual of Physics.

Houstoun : Intermediate Physics.

Joseph : Intermediate Physics.

Nightingale: Experimental Hydrostatics and Mechanics.

,, Heat, Light and Sound.

,, Magnetism and Electricity.

Shackel: Heat, Light and Sound.

,, Modern School Electricity and Magnetism.

Venkatachari: Intermediate Physics, 2 Vols.

Davis and Black: New Practical Physics.

Charles H. Drapper: A Course of Physics (Blackie & Son.)

Narayanamurthy, M.: Classified Examples in Physics (Second Edition)—P. R. Rama Ayyar & Co., Ltd.

J. P. Manikkam, P. E. Subrahmanyam, S. Ramachandra Rao: Intermediate Physics. (S. Visvanathan, 2/10, Post Office Street, Madras).

K. P. Ghosh: Text-book of Physics, (Indian Press, Allahabad).

Intermediate Practical Physics, by N. A. Nilakanta Ayyar, Lecturer, University College, Trivandrum.

Reference—

Duncan and Starling: Text-book of Physics (Macmillan).

Brown, S. E.: Sound (Cambridge University Press).

Krishnaswami, T. S.: Sound (Murthi Brothers).

H. J. Taylor: Physics (An Introductory Text-book). Oxford University Press.

T. N. Seshadri: A Handbook of Mathematical Tables and Physical Constants. (S. Visvanathan, 2/10, Post Office Street, Madras.)

(3) CHEMISTRY.

(For the examination of 1949 only)

The course shall include a more detailed study of the matter included in the Matriculation syllabus and in addition the following :—

The laws of chemical combination by weight and by volume. Atomic theory. Symbols and their use. Equivalents. Atomic weights. Molecular weights. Avogadro's hypothesis and relation of gas density to molecular weight. Chemical equations and calculations. Nomenclature.

A general knowledge of the properties of the elements and of the chief types of their compounds with a view to their classification.

The ordinary methods of preparation and the chief properties of the following elements and their principal compounds:—hydrogen, oxygen, the halogens, sulphur, nitrogen, phosphorus, arsenic, boron, carbon and silicon.

Chief sources, preparation and properties of the common metals, viz., sodium, potassium, ammonium, silver, mercury, lead, copper, zinc, antimony, bismuth, magnesium, calcium, barium, aluminium, iron, manganese, chromium, tin, and the preparation and properties of their oxides, hydroxides and their salts with the more common negative radicals.

Practical.

While the course in the practical should follow the syllabus prescribed for Chemistry theory, the list of exercises given below will afford the scope for the practical examination :—

Determination of equivalent weights of metals by—

(1) (*a*) displacement of hydrogen, (*b*) evaluation of zinc dust by application of (1) (*a*).

(2) Equivalent weight by oxidation.

(3) By displacement.

(4) Loss of weight on ignition.

(5) Determination of water hydration.

(6) Solubility of a solid in water.

(7) Assembling of apparatus and collecting samples of gases like oxygen, hydrogen, chlorine, carbon monoxide and ammonia. Simple experiments to illustrate their properties.

(8) Preparation of simple salts: barium chloride, lead nitrate, lead iodide, copper sulphate, ferrous sulphate, zinc sulphate, and magnesium sulphate from carbonates, or oxides, or metals.

(9) Exercises involving the use of indicators in acid-base titration

(*a*) Determination of the strength of an acid using standard alkali or *vice versa*.

(*b*) Determination of the equivalent weight of a solid organic acid (like oxalic or succinic) by titration.

(10) Estimation of ferrous sulphate using standard permanganate.

(11) Estimation of oxalic acid using standard permanganate.

(12) Estimation of iodine using standard thiosulphate.

Other experiments, involving general manipulation, such as, (1) separation of the soluble and insoluble portions in a mixture by simple processes, (2) measurement of volumes of gases by displacement (3) determination of solubility by chemical methods (oxalic acid, sodium carbonate).

Examination of simple substances *as per specified reactions* with a view to identification: Acid radicals, like halides, nitrate, sulphide, sulphite, sulphate, nitrite, phosphate, carbonate, arsenite, arsenate, and basic radicals like sodium, potassium, ammonium, calcium, zinc, copper, aluminium, iron, lead and magnesium (sulphates, phosphates, arsenites and arsenates insoluble in water to be avoided).

Each student should be given one exercise in quantitative and one in qualitative.

NOTE.—The practical examination in March 1949 will not contain questions on Organic Chemistry.

TEXT-BOOKS.

Books for Study—

Smith: Experimental Inorganic Chemistry (Bell).

Senter: Text-book of Inorganic Chemistry.

An Intermediate Course of Practical Chemistry by K. R. Krishna Ayyar, M.A., and A. Narayanan Poti, M.A., 1935 (A. Ramaswami, Trivandram).

Text-book of Inorganic Chemistry, 20th Edition, by L. Mitra. (Vivekananda Book Agency, Calcutta).

V. Swaminatha Ayyar: Inorganic Chemistry (Ananda Book Depot, Madras).

Intermediate Chemistry, Theoretical and Practical, by Father A. Haas, St. Joseph's College, Trichinopoly.

Practical Intermediate Chemistry by Father Albuquerque, St. Aloysius' College, Mangalore.

Practical Intermediate Chemistry by R. V. Sarma, Loyola College, Madras.

Intermediate Chemistry by Ramanand Rao, Lakshminarasimhan and Panikkar (S. Viswanathan, 2/10, Post Office Street, G. T., Madras).

Chemical Calculations by Sarma and Panikkar (S. Viswanathan, 2/10, Post Office Street, G. T., Madras).

Practical Inorganic Chemistry by M. V. Sitaraman and B. Gopalakrishnayya.

Reference—

Smith: Introduction to Inorganic Chemistry (Bell).

Holmyard, E. J.: Inorganic Chemistry (Edward Arnold).

Partington, J. R.: Everyday Chemistry (Macmillan).

Introduction to Chemistry (Inorganic) by H. K. Sen, M.A., D.Sc., (The Book Company, Ltd., Calcutta).

REVISED SYLLABUS IN CHEMISTRY.

[NOTE.—*The revised syllabus will take effect from the examination of March* 1950.]

A short course in Organic Chemistry has been included in the new syllabus and a list of exercises for the practical examination of three hours' duration has also been appended for the guidance of the teaching staff as well as the examiners. The scope of the papers in theory has also been clearly defined.

PAPER I.

(Two and a half hours' duration). Five questions (two questions on theory and three on non-metals, the usual choice being allowed).

Theory.—Physical and Chemical changes. Characteristics of chemical changes. Laws of chemical combination by weight and by volume. Equivalent weights. Dalton's atomic theory. Determination of atomic weights by chemical methods. Molecular weights by vapour density. Valency. Symbols, formulae and equations. Mendeleef's Periodic Table. Reversible reactions and elementary ideas of the law of mass action. Elementary ideas of ionic theory.

Non-metals—Only laboratory methods of preparation to be studied. Composition of air by volume. Preparation, properties and uses of oxygen and hydrogen. Water, hydrates, solubility. Classification of oxides. Hydrogen peroxide. Ozone (proof for formula to be omitted).

Halogens—Comparative study of fluorine, chlorine, bromine and iodine. Occurrence, preparation and properties of the above. Hydrogen halides. Oxides and oxy-acids of the halogens as specified below: chlorine monoxide, chlorine heptoxide, hypochlorous acid, bleaching powder, chlorate and perchlorate of potassium. Oxidation and reduction.

Sulphur—Extraction. Modifications of sulphur. Preparation, properties and uses of hydrogen sulphide, sulphur dioxide and sulphur

trioxide. Oxidation of sulphur dioxide by (*a*) a solid catalyst, (*b*) gaseous catalyst. Properties of sulphuric acid. Equivalent weights of acids, bases and salts. Normal solutions. Reactions of sodium thiosulphate and its use in estimating the strength of iodine solutions.

Nitrogen—Preparation from (1) air, (2) from sodium nitrite. Properties of nitrogen. Ammonia: preparation (from an ammonium salt), properties, uses and volumetric composition. Dissociation.

Nitric acid—Preparation, properties and uses. Action of nitric acid on non-metals; iodine, sulphur, phosphorus and metals; copper, zinc, tin, lead, magnesium and iron.

Nitrates and nitrites (comparative study)—Oxides of nitrogen; Nitrous oxide, Nitric Oxide, Nitrogen dioxide and Nitrogen pentoxide.

Phosphorus—Extraction. Allotropic modifications, uses. Phosphine. Oxides of phosphorus, tri and penta.

Acids of phosphorus, Ortho, meta and pyro phosphoric acids. Phosphorous acid. Halides of phosphorus. Phosphorus tri and pentachlorides. Hydrolysis.

Arsenic, antimony and bismuth: Arsine, Stibine. Tri and penta-oxides of arsenic and antimony. Bismuth trioxide. A comparative study of nitrogen, phosphorus, arsenic, antimony and bismuth with reference to preparation, properties and types of compounds.

Carbon: Allotropic modifications. Carbon monoxide and carbon dioxide. Carbonates and bi-carbonates.

Boron and silicon: Boron trioxide, boric acid and borax. Boron trifluoride. Silicon dioxide, silicic acid, silicon tetrafluoride. Sodium silicate (water glass).

PAPER II.—*Metals and Carbon Compounds.*

This paper should be divided into Parts A and B; Part A on Metals and Part B on Organic Chemistry. Candidates should answer three questions on Metals and two on Organic Chemistry.

Metals.—Differences between non-metals and metals. Occurrence and simple methods of winning the following metals omitting technical details: sodium, potassium, magnesium, calcium, zinc, mercury, aluminium, tin, lead, copper, silver, chromium, manganese and iron. Oxides, hydroxides, carbonates, chlorides, nitrates, sulphides and sulphates of metals. Uses of metals and their compounds indicated above.

Carbon Compounds. (Organic Chemistry).

Definition of organic chemistry. Obvious differences between inorganic and organic compounds. Detection of elements: carbon

hydrogen, nitrogen and halogens. Empirical formula; Molecular formula, from vapour density. Valency of carbon. Preparation and properties of paraffin hydrocarbons: Methane and ethane. Substitution. Common products from petroleum.

Preparation of ethyl alcohol. Properties of methyl and ethyl alcohols. Formula of ethyl alcohol.

Oxidation products of methyl and ethyl alcohols. Properties by aldehydes, and acids dealt with elementarily. Acetone obtained of distillation of calcium acetate. Difference in properties between acetone and acetaldehyde (elementary treatment).

Halogen substituted by hydrocarbons: Methyl chloride, ethyl bromide and iodide; chloroform, idoform and carbon tetrachloride, their properties and uses.

Soaps and candles. Preparation and properties of ethylene and acetylene. Differences in properties between ethane, ethylene and acetylene. Isolation of benzene, phenol and naphthalene and their uses. Differences in properties between benzene and paraffins. Properties of phenol and its uses. Difference between an alcohol and phenol.

(4) NATURAL SCIENCE.

(i) *Botany.*

(For the Examination of 1949 only.)

Theory.

1. Living and non-living things and their main features; organic and inorganic substances and their properties; plants and animals—their differences and resemblances.

2. The external morphology of root, stem and leaves; inflorescence, flower, fruit and seed. Homology and analogy. Pollination and fertilization; seed formation; dispersal of fruits and seeds; germination: dicotyledonous and monocotyledonous seeds; albuminous and exalbuminous seeds. Vegetative reproduction.

3. A study of the following families of plants including their economic importance: Anonaceae, Malvaceae, Rutaceae, Leguminoseae, Compositae, Solanaceae, Acanthaceae, Labiateae, Euphorbiaceae, Palmae and Musaceae.

4. The cell and its structure; epidermal, fundamental and vascular tissues; internal structure of roots; root-cap; root-hairs; internal structure of stems; intercellular spaces; secondary growth; internal structure of the leaf; stomata.

5. Soils and their properties; the work of the root, stem, and leaves; form, structure and function; absorption of nutrients and water, path of sap current; transpiration; adaptations for facilitating and checking transpiration; photosynthesis; significance of leaf arrangement and leaf adjustment to light; struggle for light among plants; storage and use of food reserves; respiration; growth; response to light and gravity.

6. The life histories of the following:—

Bacteria, Chlamydamonas, Spirogyra, Mucor, Yeast, a Lichen, a Moss and a Fern.

7. *N. B.*—No questions will be set for the examination from the portions prescribed below:—

Elementary talks on the following topics: xerophytes, water plants, epiphytes, parasites, insectivorous plants, role of bacteria and yeast; evolution, heredity and Mendelism.

Practical.

1. Examination under the microscope of—

(i) a cell and its parts from epidermis of onion leaf or any other suitable material.

(ii) Unicellular and multicellular plants.

2. Technical description of plant parts with special reference to external morphology of root, stem, leaf, flower and fruit.

3. Examination of different types of seeds (Bean, Castor, Bengal gram, Cucurbita, Maize and Coconut) and their germination.

4. Observation of the different kinds of vegetative reproduction including simple methods of grafting.

5. Examination under the microscope of sections of root, stem and leaf and identification of the different important tissues.

6. Observation and description of the following physiological experiments (From demonstrative experiments only).

7. Identification and drawing of the following different types:

(i) Microscopic examination only of the following—lichen Moss, Fern frond, male and female sporophyll.

(ii) Microscopic examination of *Spirogyra*, yeast, Rhizopus and Fern Prothallus.

8. Identification of the families prescribed for the course including dissection of flower and construction of floral diagrams.

At the practical examination the candidates must submit their laboratory note boooks.

Experiments :

1. Osmosis illustrated by thistle-funnel experiment.

2. Experiment to illustrate transpiration in plants (Bell-jar experiment).

3. Experiment to illustrate the rate of transpiration (Ganong's Photometer).

4. Experiment to demonstrate evolution of oxygen during Carbon Assimilation.

5. Experiment to demonstrate the evolution of Co_2 during respiration.

6. Experiment to show that light is necessary for photosynthesis.

7. Experiments to demonstrate simple features of growth and influence of gravity.

Books for Reference—

Thoday: Botany for Senior Students.

P. F. Fyson: Botany for India.

K. Rangachari: Manual of Elementary Botany for India.

K. Rangachari: A Hand-book of Botany for India.

Dixon: Practical Plant Biology.

A. G. Tansley: Elementary Biology.

Gager: Fundamentals of Botany.

M. S. Sabhesan: Intermediate Botany.

REVISED SYLABUS IN NATURAL SCIENCE (BOTANY).

(NOTE.—*The revised syllabus will take effect from the examination of 1950.*)

1. Cell as a living unit; parts of a cell; protoplasm; its physical and chemical properties. Cell division—importance of nucleus in cell

division, unicellular and multicellular organisms. Division of labour tissues.

2. Study of a flowering plant—

A. External Morphology.

The root.

Root system of monocotyledons and dicotyledons. Modifications of roots.

The shoot.

Growth of stems; buds and their significance. Types of branching. Modifications of stems.

The leaf.

Phyllotaxy. Modification of the leaf. Homology and analogy.

The inflorescense.

Its biological significance. Types of inflorescence. Bracts and bracteoles.

The flower.

Hypogyny, Perigyny, Epigyny, Pollination—Self-pollination and contrivances for cross-pollination—Fertilisation—Seed formation.

The fruit.

Kinds of fruit. Dispersal of fruits and seeds. Germination of seeds.

Vegetative reproduction—

B. Internal structure.

(i) Cell and its contents. Test for starch, protein and cellulose.

(ii) Tissues—meristematic, thin and thick walled parenchyma, collenchyma, sclerenchyma, tracheal tissue and sieve tubes.

(iii) Section of young and old stem of sun flower and maize.
Section of young and old root of bean and onion.
Section of leaf of sun flower and *Nerium*.
Cork and bark, lenticels, annual rings, heart and sap wood.

(iv) Section of anther.

(v) Section of ovary.

3. *Functions of plant parts.*

(i) Soil—their physical, chemical and micro-biological properties.

(ii) Root-hairs—absorption of salts; osmosis; plasmolysis—water culture experiments.

(iii) Movement of water and transpiration with special reference to forces involved.

(iv) Carbon assimilation.

(v) Special methods of nutrition as depicted by *Cuscuta* (parasite) *Mucor* (Saprophyte) and *Drosera* (carnivorous plant).

(vi) Respiration.

(vii) Growth and movement--Geotropism, Phototropism, Hydrotropism-

4. *Classification of plants* including life-history of the types mentioned—

Thallophyta: Algae—*Chlamydomonas, Ulothrix, Spyrogyra.*

Fungi—Bacteria, yeast, *Rhizopus nigricans, Agaricus* and usnea.

Bryophyta: *Riccia*, Moss.

Pteriodophyta: Fern.

Gymnosperm: *Cycas.*

Angiosperm: A knowledge of the following families including their economic importance:—

Malvaceae; Rutaceae, Leguminosae, Solanaceae, Compositae: Labiateae, Euphorbiaceae, Palmae and Musaceae.

5 *Ecology*—Chief external features of Xerophytes, Mesophytes and Hydrophytes with examples from local flora.

6 An elementary knowledge of Evolution and Heredity.

Syllabus in Practical work.

Items (1) and (7) in the list of experiments to be modified to read as follows:—

1. Examination under microscope—

(i) a cell its parts from epidermis of onion leaf or any osher suitable material.

(ii) Cell division in root tip of onion or any other material.

(iii) Unicellular and multicellular plants.

7. Identification and drawing of the following different types :—

(i) Microscopic examination only of the following—lichen, *Agaricus*, *Riccia*, Moss, Fern frond, *Cycas* male and female sporophyll.

(ii) Microscopic examination of *Ulothrix*, *Spirogyra*, yeast, Rhizopus and Fern Prothallus.

Reference Books.—*Substitute* the following *for* the existing list of reference books :—

1 A Hand-Book of Botany for India by K. Rangachari and N. Chandrasekhara Ayyar.

2 Intermediate Botany by M. S. Sabhesan.

3 A Class Book of Botany by A.C. Datta.

4 Text-book of Botany by S. Mukerjee

5 Intermediate Botany by L. C. Brimble.

(ii) ZOOLOGY

Theory and Practical

The chief characters of living organisms; Protoplasm, cell; Plants and animals, how they agree and how they differ; Theory of Evolution treated in an elementary manner.

The structure of the following animals treated in an elementary manner with special reference to their physiology and environment :—

Amoeba, Paramoecium, Hydra, Earthworm, Cockroach and Frog.

Outline of their reproduction. Life history of butterfly and housefly. External features of Shark and Rabbit.

The leading facts of human physiology treated in a very elementary way. The human skeleton and its parts; the arrangements of the chief

viscera in man; the action of muscles. The nature of food and the manner in which it is digested and absorbed. Glands. The work of the liver. The nature and functions of the blood. The heart and the circulation. Respiration. Waste products and their removal; Reproduction. The temperature of the body and how it is maintained. The chief functions of the central nervous system; sensory organs.

Candidates are expected to make a detailed study of the external characters and of the general arrangement and relations of the chief internal organs as revealed by dissection, in the Earthworm, Cockroach and Frog. Skeletal systems of the frog, and man; External characters of shark; stages in the life history of butterfly and housefly.

Microscopical study of live and stained preparations of Amœba, Paramœcium and Hydra (entire, L. S. and T. S.); of T. S. of Earthworm; microscopical examination of stained preparations of frog and human blood; of cartilage; bone and muscles. Mounting of mouth-parts of the cockroach and butterfly.

External study of the sheep's brain, kidney, liver, pancreas, lung, tongue; structure of sheep's heart.

Students are expected to keep a record of all practical work in a special book (which must be produced at the time of practical examination).

Books for Study—

G. C. Bourne: Comparative Anatomy of Animals, 2 Vols. (G. Bell & Sons).

Huxley (revised by Barcroft): Lessons in Elementary Physiology. (Macmillan).

Bainbridge and Menzies: Essentials of Physiology (Longmans, Green & Co).

Parker and Bhatia: An Elementary Text-book of Zoology for Indian Students. (Macmillan).

Hegner: Introduction to Zoology. (Macmillan & Co., New York.)

Borradaile: Zoology for Medical Students. (Oxford University Press).

Foster and Shore: Elementary Physiology. (Macmillan).

A. Meek: Essentials of Zoology. (Longmans).

Intermediate Zoology by B. Bonnell, Madras.

Intermediate Zoology by M. Ekambaranathan. (S. Viswanathan, No. 2/10, Post Office Street, G. T. Madras.)

Books for Reference—

1. H. G. Walls and A. M. Davies: A Text-book in Zoology.

2. A. Meek and G. R. Kohli: Essentials of Zoology (Longmans).

3. W. Furneaux and W. A. M. Smart: Human Physiology (Longmans).

Zoology—Practical

Reference Books—

1 Frog—Marshall.

2 Cockroach—Miall.

3 Frog—Whitehouse and Grove.

4 Rabbit— Do.

(5) GEOLOGY.

Introduction; The scope and sub-divisions of Geology.

(Junior Intermediate Course)

Physiography:

About 15 to 18 lectures.

The earth as a planet and its relation to the other members of the solar family.

The hypothesis of the origin of the earth.

The size and form of the earth, the interior of the earth; the physical zones of the earth. The atmosphere, the hydrosphere and lithosphere.

Land and Sea: Distribution by surface extent; heights and depths; the continental shelf.

Planetary circulation: Rotational deflection; sea breezes: monsoons, and rainfall.

Oceanic circulation: Causes and effects; waves and tides.

Geological Agents.

(*a*) Epigene agents: atmosphere, ocean, rivers, glaciers and their work.

(b) Hypogene agents: Volcanoes, earthquakes, their causes and effects.

Palaeontology: A course of about 15 lectures.

Introduction: Fossils, their mode of formation; their value in Geological and Biological sciences, table of the divisions of Geological time.

The following type fossils to be studied:

Nummulities; sponge spicules;

Monograptus, cyathophyllum; cidaris terebratula. meretrix, turretalla, nautilus and calymene.

Structural and Field Geology:

Bedding, dip, strike, normal folds, normal faults, foliation, and joints. Geological maps, drawing of sections and tracing of outcrops only—six exercises.

Stratigraphy of India:

Physical Geography of India—10 Lectures.

Outlines of the Geology of India—5 Lectures.

(Senior Intermediate Course).

Crystallography:

A course of 10 Lectures: definition of crystal; elements of symmetry, planes, axis, and centre of symmetry, symmetry, of the normal classes only with reference to the following forms:

Cubic system: Cube, octahedron, dodecahedron and tetrahexhedron.

Tetragonal system: Prisms and pyramids of the first and second order and base.

Hexagonal system: Prisms and pyramids of the first and second order and base.

Orthorhombic system: Pinacoids, unit prism and pyramid.

Monoclinic system: Pinacoids only

Triclinic system: Pinacoids only.

Mineralogy: A course of 15 Lectures.

Physical mineralogy: Colour, streak, lustre, fracture, hardness and specific gravity of minerals.

Minerals: Description of the following rock forming minerals.

Quartz, felspar, hypersthene, augite, hornblende, olivine, garnet, muscovite, biotite and tourmaline.

Economic minerals: Their occurrence and uses.

Metallic ores: Malachite, azurite, Hematite, Magnetite atynperci, psilomelane and pyrolusite and chromite.

Non-metallic ores: Talc, kaolin, serpentine, gypsum, magnesite, fluorite, asbestos, apatite, corundum.

Chemical mineralogy: Elementary concepts, atom, molecule, atomic weight, symbol, formula combining weight, molecular weight, valency, chemical reaction, radicals, chemical compound, acids, bases, salts, normal acid and basic salts.

Water of crystallization: Empirical and molecular formulae, isomorphism and dimorphism.

Petrology: 15 Lectures.

Introduction: Origin and classification of rocks.

Igneous rocks: Granite, syonite, gobbro, diorite, norite, dunite, porphyry, dolerite, obsidian, trachyte and basalt.

Metamorphic rocks: Gneiss, quartzite, slate, and schist and marble.

Sedimentary rocks: Shale, conglomerate, sandstone and lime-stone.

Practical work: Will comprise the following :—

Crystallography, Palaeontology, mineralogy, study of hand specimens of rocks and blow pipe and chemical tests for the following elements :

Al, Sb, As, Bo, Ba, Ca, C, Cl, Cr, Cu, Fe, Mg, Pb, Mn, P, K, Na, Sr, S, Ti, Tu, Zn.

Books recommended for study:

An Introduction to Geology : A. E. Truman, Thomas Murby & Co., London.

For reference: Physical Geography for Indian Students: C. S. Fox Macmillan, London.

Introduction to Geology: Bailey Weir and others, Macmillan London.

(6) GEOGRAPHY.*

Theory

I. *The Physical Basis of Geography.*—

(a) *The Atmosphere.*—Movements of air and water and the resulting types of weather and climate—insolation—distribution of land and water—horizontal and vertical distribution of temperature—atmospheric pressure and world winds—conditions of humidity and precipitation—storms. Local winds: their causes and effects on climate.

(b) *The Oceans.*—Area and depth—continental shelf and slopes—deeps—distribution of salinity and temperature—movement of the ocean waves and tides—currents and their effects on climate—deposits—coral formations.

(c) *The Land.*—Materials of the earth's crust—earth sculpture—agencies of disintegration and reconstruction—work of moving water—development of river systems—underground water—snow and ice—work of wind as an agent of erosion, transport and deposition. Earth movements: volcanoes—lakes—shorelines—deltas and estuaries—factors affecting soil formation and distribution of soil types.

(These topics to be dealt with in some detail so as to give a real grounding for the later study of Regional Geography). *(a)* and *(c)* to be given about three-fourths of the time apportioned for the study of I; and one-fourth to (b) the Oceans.

II. *General Regional Geography on a World basis*:—

(a) *General Principles of World Geography.*—(leading up to the Concept of major natural regions of the world.)—General Principles of World Geography—structure—climate—vegetation—distribution of plant and animal life—study of major natural regions.

(b) *Elements of Economic Geography on a World Basis:*

A. Distribution, Production and Trade of the following :—

(a) Cereals—Rice, Wheat, Maize, Millets.

(b) Animal Products—Meat, Fish, Dairy Products.

(c) Plantation Crops—Sugar, Tobacco, Rubber, Tea, Coffee, Cocoa.

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*The subject-matter of the Syllabus will be distributed among the question papers as follows:

Paper I.	Part I.	Physical Basis of Geography.
	Part II.	General Principles of World Geography.
Paper II.	Part I.	Regional Geography of India.
	Part II.	Elements of Economic Geography on a World Basis.

(*d*) Sources of Power—Coal, Oil, Water Power.

(*e*) Industries—Iron and Steel, Cotton, Wool, Silk and Jute.

B. Principal means of Transportation.

Railways and Roads.

Sea ways.

Air ways.

III. *Detailed Study of India.*—(World relations to be stressed) Regional Studies with reference to the following :—Structural features, relief and rivers, soils—climate—place in world climatic types, study of the monsoons, comparison with other monsoon areas—the effect of physical features on distribution of natural resources and on economic development—major products and industries—land and sea trade—Empire and world relations—communications—distribution of population—Geographic factors affecting status in world economy.

Practical

A. *Shape of the Earth*:

Determination of position—Latitude and Longitude—Local time—Greenwich time and Indian Standard time.

Typical exercises:

(i) Determination of Latitude by Solar observation.

(ii) Determination of Longitude with reference to time.

B. *Field Mapping*:

(Elementary treatment only to be expected.) Use of Chain, Prismatic Compass, Plane Table and Clinometer.

Candidates must be able to handle these instruments.

C. *Map work*:—

(i) Scales—Section drawing—Intervisibility—Enlargement and reduction.

(ii) Methods of representing relief and other physical features—Typical land forms, conventional signs and symbols.

(iii) Elementary study and interpretation of Survey of India Topographic Maps with special reference to the one inch map.

D. *Cartographic Section*:

Diagramatic and Cartographic methods of expression of Climatic, Economic and other Geographic data.

E. *Weather Recording Instruments*:—

Use of Thermometers including the Maximum and Minimum, Wet and Dry bulb—Rain-gauge—Barometer—ordinary and Aneroid—Anemometer.

Rules for conducting the Practical Examination :

The candidates must submit their practical note books at the Practical Examination.

The students to be required to answer three questions only.

The following text-books are recommended to indicate the standard of work required :—

Intermediate Geography—L. Dudley Stamp (Longmans, Green & Co.)

The Indian Empire—L. Dudley Stamp. (Longmans, Green & Co.)

Physical Geography—P. Lake. (Cambridge University Press).

A shorter Physical Geography—E. de Martonne (Christophers).

Physical Geography for Indian Students—Cyril S. Fox (Macmillan).

Mapwork and Practical Geography—J. Bygott. (University Tutorial Press).

Systematic Geography, Part I—Wilis (Philip).

A Systematic Regional Geography—Unstead (University of London Press).

Land Forms and Life—C. C. Carter. (Christophers).

Preece and Wood: Foundations of Modern Geography, Books 1 to 3 (Oxford University Press.)

Erwin Raisz: Cartography. (Mcgraw Hill Book Co.).

For Reference.—

Oxford Advanced Atlas—(Oxford University Press).
Philip's University Atlas—(Longmans).
Mathematical Geography—Vol. 1—Jameson & Ormsby (Pitman).
The Continent of Asia—L. W. Lyde. (Macmillan & Co.).
Earth Lore—Shand—(Methuen.)
Winterbotham: A Key to Maps. (Blackie).
Debenham: Exercises in Cartography. (Blackie).
The following books in the Home University Library series (Butterworth) are recommended for general reading :—
Modern Geography—Newbigin.
Commercial Geography—Newbigin.
Climate and Weather—Dickson.
Origin of the Earth—Gregory.

(7) PSYCHOLOGY

1. Nature, scope, subject-matter and methods of study of Psychology.
2. Mind and Body relation. Nature of consciousness.
3. Sensory and motor reactions, reflex action ; nature of will.
4. Sensations—different kinds.

5. Perception and Attention. Nature of Perception, types of Perception, illusions, hallucinations; Factors of Attention.
6. Intelligence—Nature, measurement and testing.
7. Learning, Memory, improvement of memory—Habit.
8. Thought and Language Relation—abstract idea—concept—Induction and Deduction.
9. Feeling and Emotion. Theories of Emotion. Expression of Emotion. Nature of instincts.
10. Imagination—Dreams—Play—Psycho-analysis.
11. Personality—normal, abnormal.

Books recommended:—

Jalota: An Introduction to Psychology.
Titchener: A Beginner's Text-Book of Psychology.

(8) LOGIC.

1949.

Text-book:—

An Introductory Text-book of Logic, by Creighton, revised by Smart, omitting Chapter II and the whole of Part III.

For Reference:—

1. Welton and Monahan's "Intermediate Logic" as revised by Mellone.
2. Fundamentals of Logic by Dr. T. M. P. Mahadevan, (S. Viswanathan, 2/10, Post Office St., Madras.)
3. Handbook of Logic by R. Ramanujachariar.

Syllabus in Logic.

(With effect from the Examination of March 1950)

I PAPER—DEDUCTION.

Definition and Scope of Logic. Relation of Logic to other Sciences with special reference to Psychology. Is Logic a Science or Art; or is it both? Material of Logic—Logic and language.

Unit of thought. Judgment and its parts. World—name—term, Classification and function of terms—Singular, proper and general—Distributive and Collective use—Abstract and Concrete, Positive and Negative, Absolute and Relative. Extension and Intension of terms—Inverse relation. Are proper names connotative?

Logical Definition, Division, and Classification. Logical definition—purpose—Rules—Testing. Logical Division—purpose—rules—Testing. Dichotomy—Relation between Definition and Division. Nature of propositions- Categorical, hypothetical and disjunctive. Quality, and quantity—reduction of sentences to logical forms. Formal

relation of Subject and Predicate—Import of propositions. Distribution of terms—Laws of thought.

Inference—Mediate and immediate—logical opposition—conversion—obversion, contraposition, inversion, obverted converse.

Nature of Syllogism—Rules—Figure and Mood. Special rules of the figures—Determination of valid moods—Mnemonic lines—Testing of Syllogisms—Reduction—Direct and Indirect.

Hypothetical propositions and arguments. Disjunctive propositions and arguments. Dilemma—Relation between categorical, hypothetical and disjunctive propositions and arguments. Abbreviated and non-syllogistic arguments—Enthymeme—Sorites—Pro-Syllogism and Epi-Syllogism. *A fortiori* arguments.

Fallacies.

II PAPER—INDUCTION.

The problem of Induction.

Types of Induction—Enumerative and Scientific.

The Assumptions of Induction.

Stages in the Inductive Process.

Observation and Explanation.

Relative Advantages of experiment over observation.

Simple Enumeration, Statistics and Calculation of chances—their place in induction.

Determination of Causal Relations:

Cause—Comparison of Scientific with popular view—Plurality of causes—Intermixture of effects. Mill's Experimental methods General nature—Method of Agreement, Method of Difference. The Joint Method of Agreement and Difference. The method of Concomitant Variations, the Method of Residues. Mill's methods —their relation and value—Place of elimination in Induction.

Analogy—Nature, value and limitations of analogy.

Hypotheses—Reasoning from a Hypothesis—Formation of Hypotheses—Requirements of a good Hypothesis—Verification and proof of hypotheses—Deductive and hypothetical method.

Relation between Deduction and Induction.

Fallacies of Induction: Non-observation, Mal-observation—False cause —Unsound Analogy—Barren hypothesis and Hasty Generalisation.

Text-Books.

1950.

The same as for 1949, with the addition of "Test-book of Logic" by Alauddin Ahmed, among the books for reference.

(9) ANCIENT HISTORY.

The following books are recommended as indicating the scope in Greek and Roman History—

I. (1) Bury's History of Greece.
(2) History of Greece—Tutorial Series.

II. (1) History of Rome—Tutorial Series.
(2) Pelham's History of Rome.
(3) Myer's History of Rome (Methuen).

N.B.—In regard to Bury's History of Greece, the bigger book is intended.

(10) MODERN HISTORY.

General Outlines of Political, Constitutional and Economic History, the scope being indicated by Rait's British History, (bound in one volume, Nelson & Sons) and Rayner: A Concise History of Britain (published by Messrs. Longmans, Green & Co.)

Reference—

Trevelyan's History of England.

Ramsay Muir: British History (Longmans.)

Carter and Mears: British History.

Note:—The first paper shall deal with the History of Great Britain and Ireland, down to 1603 and the second paper shall deal with the period after 1603 down to the present day.

(11) ISLAMIC HISTORY.

Text-Books.

(1) A History of the Saracens by Ameer Ali.
(2) Heroes of Islam by Salik.
(3) Arab Civilization by Hell.

(12) INDIAN HISTORY.

General Outlines of Indian History, the scope being indicated by Messrs Longmans' Series of three books:—(1) Hindu India by Mr. K. V. Rangaswamy Ayyangar, (2) Muhammadan India by Messrs. H. L. O. Garret and Sitaram Kohli, and (3) British India by Mr. Rushbrook Williams.

For Reference:—

A History of India by Sinha and Bannerjee.

Note:—The first paper shall deal with Ancient and Mediaeval Indian History down to 1526 A.D., and the second paper shall deal with Indian History from 1526 A.D. to the present day.

(13) AGRICULTURE.

Theoretical:—(2 hours a week for 2 years, each year consisting of 32 working weeks—total 128 hours).

Weather.—Climate, seasons, monsoons and rainfall, as affecting the growth of crops.

Soils—Origin. Formation. Soils of the Madras Presidency.

The proximate constituents, sand, clay, lime and humus. Fertility of the soil as modified by its physical, chemical and biological properties. Water capacity and movement of water in soils. Drainage. Dormant and available plantfood. Retentive power of soils for manurial constituents.

Land Measurement—Measurement of land. Laying out of plots. Calculation of areas.

Tillage and Tillage Implements.—Necessity for and effects of tilth, tillage. Tilth, tillage operations in wet and dry lands. Ploughs and ploughing. Wooden and iron ploughs. The parts of a plough and general adjustments. Harrows. Guntakas. Cultivators. Rollers. Tools employed in tillage operations.

Seeds and Sowing—Preparation of land for sowing. Deep and shallow sowing. Broad-casting and drilling implements used. Preparation of seed for sowing. Quantity and quality of seed. Selection of seed and seed strains. Germination of seed. Seed-beds. Nurseries. Transplanting.

Plant Life—Plant nutrition as illustrated by the growth of farm crops. Functions of roots, stems, leaves, flowers and seeds. Reproduction from seeds and by vegetative growth. Weeds and their distribution in land. Eradication of weeds. Interculturing. Implements and tools used.

Irrigation—Necessity for water. Sources of water supply. Laying out irrigation channels in the field. Water-lifts.

Manures and Manuring—Necessity for manures. General principles governing the application of manures. Classification of manures. Farm manure, its collection and preservation. Synthetic Farm Yard Manure. Green manuring, oil-cakes, bonemeal, fish manure. Concentrated and special manures available in South India. Unit values of manures.

Harvesting—Harvesting, threshing, cleaning and measuring or weighing of produce. Storage of produce. Marketing.

Crops and Cropping—Rotations and mixed cropping. The chief Cereal, Pulse, Industrial Fodder and Garden crops of the Presidency, for instance, the following :—Paddy, cholam, ragi, cumbu, dholl, Bengal gram, sugarcane, cotton, groundnut, castor, gingelly, plantain, tobacco, chillies, gogu, indigo, fodder-cholam, sunhemp, sweet-potatoes, brinjals and gourds. Other crops peculiar to the locality.

(A practical working knowledge of the crops is required, deduced as for as possible, from the students having taken part in all field operations including the preparation of the land, sowing and planting manuring, irrigating, weeding, harvesting, threshing, and preparation for the market).

Damages caused to crops by insect pests and fungoid diseases. Control measures.

Farm Animals and Feeding.—Care and management of cattle. Breeds of cattle. Breeding. Points of a good animal. Common ailments and first-aid treatment. Cattle-foods—roughages and concentrates. Rations for growing animals, working cattle and milch cows. Milk and its general properties.

(*Practical*:—3 hours in the morning, once a week, for 2 years, each year consisting of 32 working weeks—total 64 classes).

Each student should take part in all operations going on on the farm—not merely seeing the work done by coolies—maintain a field book of observations, corrected and testified by the class teacher and the Principal as student's own work. Field books should be produced at the time of the Practical Examination. Not less than 75 per cent of practical classes should have been attended by each student.

Examination.—The examination will be both written and practical. The paper will be of 2 hours' duration and will carry 75 marks.

The practical to be of 3 hours' duration, to consist of ploughing and other field operations as well as an oral examination and to carry 75 marks.

The minimum for a pass will be the same as for other optional subjects, *i.e.* 35 per cent.

(14) ELECTRICAL ENGINEERING.

AN ELEMENTARY COURSE IN MECHANICAL ENGINEERING.

Graphics: Problems relating to the reduction of a system of forces in two dimensions. Graphical arithmetic. Plotting of curves from given data.

Machine Drawing: Ability to copy accurately to scale and supply additional views. The preparation of drawings of simple machines from dimensioned sketches, models or actual parts of machines.

Preliminary geometrical drawing recommended:—Projections of simple solids like prisms, pyramids, cones, cylinders in simple positions on the 3 co-ordinate planes. Elementary changing of planes of projection. Simple sections.

Strength of materials: Mechanical properties of engineering materials. Stress and strain. Modulus of elasticity. Elastic limit. Ultimate strength. Factor of safety and working strength. Statics and application to simple structures. Coplanar forces. Application of graphical methods to simple frames with pin joints such as cranes. etc. Elementary study of beams. Strength and stiffness. Bending moment and shearing force. Sections in iron, steel and wood. Simple shear and torsion. Horse power transmitted by solid circular shafts by assumption of formula. Principle of work. Potential and kinetic energy. Horse power. Centrifugal force and its application to governors.

Materials: Characteristics of cast iron, wrought iron and steel. Working strength of these materials in compression, tension and shear. Characteristics of copper, brass, gun-metal and aluminium.

Shafting and bearings: Simple forms of shafts and shaft couplings. The pin type flexible coupling. Simple types of bearings. Pedestal, ring oiled, and ball bearings. Use of belt pulleys and their velocity ratio. Use of spur and bevel wheels. Clutches and universal joints.

PRACTICAL WORK.

The following indicates broadly the scope of the practical work.

Exercises in wood-work, forging, soldering, casting, fitting, wood and metal turning.

ELECTRICAL ENGINEERING.

General principles: Electro-magnetic and C. G. S. systems of units. Principles of electro-magnetic induction. Practical system of electrical units. Electro-magnets. Production of alternating currents. Commutation. Alternating e.m.f. and current R. M. S. values. Frequency, Power and Power Factor. Simple notions of Inductance Impedance and Polyphase currents.

Measurements: The principles of construction and use of instruments ordinarily employed.

Generators: Continuous current generator (Shunt, Series and Compound); Alternators—single and three phase. Transformers—single phase; their construction, principles of action and characteristics.

Motors: Continuous current motors (Shunt, Series and Compound), their construction, principles of action, performance and uses. Simple notions about synchronous and induction motors.

Batteries: Construction and management of Primary and Secondary batteries and their practical applications.

Distribution: Methods of distributing electric power in streets; overhead and underground mains. Calculation of conductor sizes.

Illumination: Candle power; Use of shades; Photometer.

Note.—The instruction given will in general be descriptive only. In alernating current the treatment will be by the use of graphs avoiding mathematical equations.

LABORATORY COURSE.

The following indicates broadly the scope of the practical work.

1. Simple exercises in soldering, joining and wiring.

Direct Current—

2. Experimental verification of Joul's Law.
3. Measurement of efficiency of an electric kettle.
4. Blow out current of fuses in open air and fuse holders; influence of fuse holders and increase in number of strands.
5. Practical methods of measurement of resistance.
   (a) Drop of potential method.

(b) Comparison of voltage drop with drop against a known standard resistance.

(c) Wheatstone bridge method.

(d) By ohmmeter.

(e) Insulation resistance by megger.

6. Calibration of measuring instruments—

(a) Calibration of ammeter with a sub-standard instrument.

(b) Calibration of voltmeter against a standard cell by use of potentiometer and ratio box and against a sub-standard voltmeter.

(c) Calibration of voltmeter as ohmmeter.

(d) Calibration of a Wattmeter against sub-standard voltmeters and ammeters.

(e) Calibration of ampere hour and watt hour meters.

7. Tracing a switch board circuit with and without faults.

8. Measurement of power taken by lamps, fans, electric kettles, irons, stoves, etc.

9. Shunt Motor—

(a) Standard connections for starting up a self excited D. C. shunt wound motor with standard type starter and field rheostat.

(b) Reversal of a shunt wound motor.

(c) Starting shunt wound motor with separate excitation. Use of field discharge switch.

(d) Speed characteristic of shunt motor.

(e) Efficiency of shunt motor by brake test.

10. Compound wound motors (cumulative)—Speed characteristics.

11. Generators—

(a) Open circuit characteristics of a shunt wound generator separately excited.

(b) Load characteristic of shunt type generator separately excited and self excited.

12. Motor generators—Overall efficiency of a D. C.—D. C. Motor generator set.

13. Measurement of internal resistance of a primary and a secondary cell.

Alternating Current—

14. Measurement of inductance from applied A. C. voltage, current flowing and from frequency.

15. Measurement of impedence from voltage, current and frequency. Resistance and reactance components by right angled triangle construction.

16. Alternators.

(a) Open circuit characteristic of a three phase alternator.

(b) Load characteristic of a three phase alternator with balanced load.

17. Transformers—Single phase transformers—

(a) Ratio of transformation.

(b) Load characteristic of a transformer with non-inductive load.

(c) Efficiency by actual loading by measuring input and output by Wattmeters.

18. Measurement of power.

(a) By Wattmeter in a single phase circuit.

(b) in a three phase balanced load circuit by measuring power in one phase by a single Wattmeter and multiplying by 3. Power output of a three phase star connected generator on balanced load.

19. Measurement of power factor.

(a) Single phase circuit.

(b) Alternator three phase star connected balanced load circuit by assumption of formula.

$$\text{Cos } \phi = \frac{\text{Watts}}{\text{Line volts} \times \text{line amps} \times \sqrt{3}}$$

20. Induction motor. Squirrel cage type; Three phase.

(a) Speed variation on load.

(b) Efficiency from brake test.

21. Calibration of an A.C. single phase watt hour meter with a standard Wattmeter and standard clock.

22. Photometry—Measurement of candle power of an incandescent lamp against any standard.

Note.—At least 2 hours a week should be devoted to practical work.

(15) MECHANICAL ENGINEERING.

Graphics: Problems relating to the reduction of a system of forces in two dimensions. Plotting of curves from given data. Graphical arithmetic.

Machine drawing: Ability to copy accurately to scale and supply additional views. The preparation of drawings of simple machines and parts from dimensioned sketches, models or actual parts of machinery.

Geometrical Drawing: Projection of simple solids like prisms, pyramids, cones, and cylinders in simple positions on to the 3 co-ordinate planes. Elementary changing of the planes of projection. Simple sections.

Strength of materials: Mechanical properties of engineering materials. Stress and strain, modulus of elasticity and elastic limit. Ultimate strength, factor of safety and working strength. Statics and application to simple structures. Coplanar forces. Application of graphical method to simple frames with pin joints. Elementary study of beams. Strength and stiffness, bending moments and shearing force. Sections in iron, steel and wood. Simple shear and torsion. H. P. transmitted by solid circular shafts by assumption of formula. Principle of work. Potential and kinetic energy. Horse Power. Centrifugal force and application to governors.

Heat Engines: Heat and work. Properties of steam. Sensible heat. Latent heat and total heat. Dry, saturated and superheated steam. Boiling point of liquids. Relation between temperature and pressure of steam. Laws of perfect gases. Estimation of mean pressure and work done from indicator diagrams. Brake horse power. Mechanical efficiency of engines.

Steam engines: Stationary steam engines condensing and non-condensing, the locomotive engine; the de Laval turbine; description and working. Mechanical efficiency.

Internal combustion engines: Modern engine cycles and their applications. A simple type of 4 stroke oil engine and a two stroke oil engine.

Boiler: Description and working of common types and their accessories.

Materials: Characteristics of cast iron, wrought iron and steel. Working strength of these materials in compression, tension and shear. Characteristics of copper, brass, gun-metal and aluminium.

Connections: Forms and proportions of rivets and their arrangements in lap and butt joints. Single and double riveted joints. Pitch of rivets. Forms and proportions of bolts, nuts and keys.

Shaftings and bearings: Simple forms of shaft couplings and shaft bearings. Clutches; claw and simple cone friction types. Arrangement of pedestal and footstep bearings. Simple types of ball bearings. Methods of lubricating bearings.

Belt and toothed gearing: Forms of belt pulleys; Velocity ratio, Fast and loose pulleys. Stepped speed cones. Tension of belts. Joints of belts. Materials of belting. Spur and bevel wheels and their velocity ratio.

Engine details: Usual forms of cranks and levers, eccentrics, connecting rods, cross heads and coupling rods.

Pumps: Working of simple types.

Note:—*Instruction will in general be descriptive only.*

PRACTICAL WORK.

The following indicates broadly the scope of the practical work.

1. Simple lessons in wood work, forging, soldering, casting, fitting, wood and metal turning.
2. Verification of Hooke's Law for tension. Determination of elastic limit and Young's Modulus.
3. Verification of laws of strength and stiffness of beams.
4. Determination of the mechanical equivalent of heat.
5. Determination of latent heat.
6. Determination of the relation between temperature and pressure of steam.
7. Determination of I. H. P. from diagram supplied.
8. Brake Horse Power of an engine.

Note.—At least two hours a week to be given to practical work.

Text-Books—To indicate the scope and standard, the following text-books are suggested for the present:—

Electrical Engineering—Mechanical Engineering.

Applied Mechanics—Cryer and Jordan.

Machine Design—Frank Castle.

Mechanics for Engineers—Morley (advanced portions to be omitted.)

Steam (Elementary)—Ripper.

Steam Engines—Holmes.

Electrical Engineering—Principles of Direct Current Electrical Engineering—Barr.

Electrical Engineering—Gray.

(16) SURVEYING

Chain, Prismatic Compass and Plane Table—Running a chain line; measuring offsets; use of the cross staff; optical square; survey of areas with chain only; well conditioned triangles, check or tie lines; keeping the field book: testing the chain; modes of passing obstacles; chaining across a river or other obstacle; survey of areas with prismatic compass; keeping the field book; plotting surveys made with chain and compass; survey of areas with plane tables; inaccessible points; filling in a survey; finding one's place in a survey.

Setting out: Ranging straight lines by eye. Laying out curves by chords and offsets.

Level: Permanent and temporary adjustments; levelling field book, two methods of reducing the field book; levelling; contouring: cross section; correction for curvature of the earth and refraction; check levels; bench marks; use of Abney's level; clinometer and ghaut tracer; setting out gradient for railways, canals and sewers.

Theodolite.—Use and adjustment s of Theodolites; traversing; Gales' system; setting out straight lines and curves.

Drawing and Mensuration..—Use of Drawing instruments, construction of scales; conventional signs; estimation of areas; use of Planimeter and Pantagraph; plotting lines of levels and taking out quantities of earth-work; copying plans to different scales by squares;

representation of ground by contours; section on contoured plans; location of roads and railways on contoured plans showing cuttings and embankments; estimation of areas and volumes; reduction and plotting of a theodolite traverse.

Surveying.—Four hours per week for two years will be adequate for covering the syllabus. One hour each week may be devoted to lecturing and 3 hours for outdoor practice. For every 12 students, one set of instruments may be provided.

Text-Book:—To indicate the scope and standard, the following text-book is suggested for the present:—

Surveying.

Methods of Surveying by N. F. Mackenzie.

(17) ARCHITECTURE.

1. General Survey and History of Architecture :—Egyptian, Greek, Roman, Byzantine, Gothic, Indian, Eastern, Modern.
2. Materials of construction, and limitations imposed by them—Wood, stone, brick, concrete, terra cotta, steel, mortars.
3. Styles of Architecture :—Main points of difference and evolution.
4. Indian styles and their chief characteristics—Cave Architecture, Jain, Buddhist, Dravidian, Pallava, Chalukyan, Vijayanagar, Saracenic, combinations of styles.
5. General principles of designs:—Temple architecture, Architecture of Public Buildings, Indian Domestic Architecture—Huts, contiguous houses with court-yard, bungalow or garden houses, palaces. Influence of climate, rainfall, geographical position, etc.
6. Details and Ornamentation—Orders, Pillars, Bases and Capitals, Doors and Windows, Friezes, Mouldings, Ceilings Roofs, Facades, Floors.
7. Drawing—Geometrical Drawing, Figure Drawings, perspective, making sketches from objects, shading.

Note.—There shall be two papers of two hours duration each.

(18) HOUSEHOLD ART.

Theory.

MOTHER CRAFT.

(A)

Physical Development.

I. Pre-Natal Care and influences.—

Signs of Pregnancy.

Hygiene of Pregnancy.

Rules of Health, Food, Fresh air, Clothing, Cleanliness, Rest, Exercise.

Minor Disturbances.

Choice, Arrangement, Preparation of Mother's Room, Linen, etc.

Preparations for baby.

II. *Maternity and Child Welfare Centres.*

The need for these centres.

Their organization in the Presidency.

Importance of Ante-Natal Clinics and of having a trained Midwife at Confinement. Cause and prevention of Mother and Infant Mortality. Harmful Customs.

III. *The New born infant and its needs.—*

1. General management of the young baby. Bathing, Clothing, Routine, etc.

2. Feeding.—

(*a*) Breast.—How to increase the milk supply—Test Feeds—Supplementary Feeding.
(*b*) Artificial—Cow's Milk—Patent Foods.
(*c*) Weaning.
(*d*) Diet from 6 months onwards.

IV. *Baby's Development.*

(*a*) Abilities.
(*b*) Fresh air, sleep, exercise, Sun.
(*c*) Habit formation.

V. *Toddler Stage.—*

Diet, Nursing Hygiene—Minor ailments.
Toys, Supervision.

VI. *The Older Child.—*

His Needs and daily routine.
Relation to the home and family.

(B)

The Psychological Development.

Four Stages.—

A. Extreme infancy.
B. From 4th month to 2 years old.
C. The Toddler Stage.
D. The older Child.

Sub-Heads.—

1. Habit Training.
2. Discipline.
3. Emotional needs and problems.
4. Sex in childhood.
5. Religion and Spiritual growth.
6. The child's relations to:

A. His parents.
B. The outside world.

Mother Craft—Books.

The feeding of children from six months to six years in War Time	Published by the Indian Research Fund Association, New Delhi.
A Key to Mother Craft ...	Compiled by Diana Hartley and A. E. Simpson (Peter Marlow).
Infant Care ...	Publication No. 8, United States Department of Labour 1929.
The Nursery Years ...	Susan Isaacs (George Routledge & Sons.)
Parents' Question ...	Published by Child Study Association of America. (Publishers : Victor Gollancz.)
Child Psychology ...	(C.L.S.)
Ananda's Questions ...	(C.L.S.)
Early Childhood Education ...	Pickett (George Harrap).
Home Craft and Mother Craft in India.	(C.L.S.)
Seven Stages of Childhood ...	Elizabeth Sloan Chessen, (Herbert Jenkins.)

Food and Cookery.

I. The relation of good nutrition to normal physical development and sound health. Students will be expected to maintain their own weight chart , also weight and height charts of nursery school children or other groups of children as available.

II. The energy requirements of adults in India.

(*a*) Definition of the Calorie.

(*b*) Energy requirements as influenced by sex, age, race, climate and occupation, including pregnancy and lactation.

III. (*a*) Energy value of foods—explanation of methods of determination.

(*b*) Calculation of energy value of common food material—such as, average servings of rice, ragi, wheat, and cholam—milk and curds—flesh foods—fish—eggs—ghee—vegetable oils, and hydrogenated oils—dhalls, grams, groundnuts, and six common Indian local vegetables.

(*c*) Food intake for one day, and calculation of total Calories.

(*d*) *Sources of Food Calories.*—Energy value of Carbohydrates, fats, oils and proteins.

IV. *Protein.*

(*a*) Its function as a body builder and promoter of growth.

(*b*) Comparative efficiency of animal and vegetable proteins.

(*c*) Types of proteins, daily requirements.

V. *Minerals.*—Their function as body builders and promoters of health and growth—*i.e.* calcium, phosphorus, iron, copper, iodine.

VI. *Vitamins.*—Vitamins and their significance—Study of source and importance of Vitamin A, the B. Vitamin, Vitamins C, D, and E—Economical sources of Vitamins.

VII. *Study of Common Food Materials.*

(*a*) *Cereals.*—Comparison of food composition of cereals common in India—The structure of a cereal grain—results of over-milling, over-washing,—value of par-boiled rice, bran, atta and malt products.

(*b*) *Pulses.*—Composition and value of dhalls, grams, soya beans, groundnuts and beans and peas—defects as a total source of protein—value of germination.

(*c*) *Composition and value of*—Milk, curds, buttermilk, butter and ghee, dried and condensed milk.

(*d*) Flesh foods—meat, liver, fowl and fish.

(*e*) Eggs.

(*f*) Vegetables, leafy vegetables, roots, tubers and other Indian and English vegetables, salad vegetables and herbs.

(*g*) Fruits, plantains, mangoes, jackfruit, bread-fruit, citrus fruits, papaya, melons, guava, amla or nellikai.

(*h*) Nuts, cocoanut, cashew, almond, walnut.

(*i*) Spices and Condiments—their source, uses and abuses—coriander, cummin seeds, mustard, ginger, nutmeg, mace, cloves, peppers and chillies, turmeric and saffron, cardamon, cinnamon and cassia, tamarind, garlic, asafoetida, salt and vinegar.

(*j*) Beverages—Source, manufacture, composition and value of tea, coffee, cocoa.

VIII. *The Planning of Balanced Diets.*

Summary of essential factors, *i.e.*—

(*a*) Protein material adequate in quantity and quality, Mineral constituents and vitamins as regulatory substances, Energy requirements sufficient to maintain weight, Regulatory substances, such as, roughage and water in moderation to assist bowel evacuation, etc., Importance of hard material to necessitate vigorous chewing.

(*b*) A comparison of diets of India with regard to their quality as sources of essential factors.

(c) Planning balanced diets for adults in South India at different economic levels with specimens of menus, utilising these diets.

IX. *Cooking of Food.*

(a) Reasons for cooking, problems of cooking, the theory of methods of cooking, their advantage and disadvantage, *i.e.* boiling, steaming, stewing (curry-making), frying, broiling and parching.

(b) Choice of essential equipment and utensils as affected by its cost, efficiency, and durability—care and cleaning of equipment and utensils, useful indigenous cleaning aids.

The purchasing and storing [of food in a home. Cleanliness and care essential in preparation of meals. Weights and measures used in local area. Effect of various types of heat, on animal protein, vegetables, carbohydrates and vitamins.

(c) Cooking of the following :—

(i) *Beverages*—Making and serving of tea, coffee, cocoa, fruit drinks.

(ii) *Cooking Cereal Foods*—(Any four of the following). Plain boiled rice, steamed rice, rice cooked by absorption ; sweet and savoury, rice palagarams, ragi, roti, atta chapatties and purees. *Conji* made from millets, soojee, home-pounded whole rice, etc.

(iii) *Cooking Pulses.*—(Any three of the following.) Dhall curry and rice, fried savoury dhall, dhall vadai, khicherie, muruku, ompodi, etc.

(iv) *Cooking Vegetable Foods.*—(Any three of the following.)

Vegetable curry and rice; Brinjal mussala cutlets ; Fried plantains or potatoes or breadfruit or brinjals, or bhendikai, etc., Kootu, bonda, etc. The making and serving of fresh chutney made from raw or cooked vegetables.

(v) *Cooking Meat, Fish and Egg.*—(Optional—any four of the following.)

Meat curries, dry and moist with rice ; fish moli ; or curry, fried fish and meat. Various methods of cooking eggs.

Note.—Students who cannot take this section must spend extra time on cooking legumes, and vegetable foods.

(vi) *Indian Sweet-meats.—(*Any two of the following. Hulva, Mysorepak, cocoanut or jaggery toffee, laddu

(vii) *Invalid Diets*—General considerations, typical diets. liquid, soft and light for the sick.

Necessity for appetising food, and careful serving.

To cook any five of the following.— Making curds, whey, egg flip, vegetable or meat soups, custards, milk puddings and steamed fish and sauce, vegetable purees, lightly cooked eggs.

(viii) Students to have practice in planning, ordering or purchasing, cooking and serving at various costs—balanced meals for family groups.

Suggested Reference Books :

1. Health Bulletin Nos. 23 and 28—Government of India Press.
2. What to Eat and Why? by N. Gangulee, C.I.E., Ph.D., Oxford University Press.
3. Intermediate Domestic Science by W. Munn Rankin and E. M. Hildreth-Allman & Sons, Ltd., 15, Creechurch Lane, E. C. 3.
4. Food in Health and Disease by Lulu Graves—Macmillan & Co.
5. Indian Cookery by Veerasamy—Herbert Joseph, Ltd., London.
6. Food, Health and Vitamins by Plimmer and Plimmer—Longmans, Green & Co., Latest Edition.
7. Essentials of Nutrition by Sherman (1943)—Macmillan & Co.
8. Rose's Foundations of Nutrition—brought up-to-date by Macleod and Taylor (1944)—IV Edition—Macmillan & Co.

Home Making.

1. *The Home.*

1. Choice of House—Site, neighbourhood, soil, suitable aspect—with respect to sun and prevailing wind—essential features of a good structure, privacy, ventilation, lighting, scientific methods of drainage and sanitation pure water supply ; suitable flooring and walls according to the use of the rooms.

2. Analysis of a home—Allocation of space for essential purposes —for cooking, dining, sleeping, study, children, storage, toileting, reception of guests, prayer room. Practical work. Students to visit modern houses, model housing schemes, etc.

3. Furnishing of a home.—

(a) Consideration of family requirements, costs, efficiency, durability and beauty.

(b) *Kitchen.*—Well equipped, well ventilated, planned to save time and labour ; protection against flies.

Types of stoves or ovens; types of fuel as wood, charcoal, oil, gas, electricity; storage of fuel; smoke escape.

Cooking vessels—purchase of suitable types for various purposes—materials utilized in cooking vessels—suitability, durability, efficiency, cost. Water—provision for washing foodstuffs, utensils, dishes, glass, cutlery. Convenient arrangment of utensils.

(c) Store-room.—

1. Correct aspect—suitable ventilation to maintain dry, cool atmosphere.
2. Equipment for correct storage.
3. Ordinary arrangement of food materials.

(d) Dining-room.—

1. Furniture, equipment—china, glass, cutlery, silver.
2. Provision for storing equipment between meals to save time and labour.
3. Serving of meals.

(e) *Living and reception room.—Suitable* furniture of different types; attractive and economical floor coverings.

(f) Bedrooms.

1. Furniture required for comfort, durability and freedom from pests.
2. Protection against mosquitoes.
3. Suitable floor coverings.
4. Convenience for dressing and arrangement for clothes in use and soiled.
5. Storage of clothes and linen.

(g) Bathroom.—

Facilities for bathing and toilet purposes; Provision for family medicine cupboard.

(h) Interior Decoration.—Importance of good taste—structural and decorative design, Application to home, furniture and dress, harmony, proportion, balance, rythym in lines; How to know colour—its meaning, colour charts, colour combinations as contrasting and analagous, tints, shades, hues; How to use colour in home, gardens, dress-colour of walls choosing of soft furnishings, pictures, ornaments such as vases.

II. *Cleanliness and Care of the Home*:

(a) Importance of cleanliness of home and its surroundings. Housewife's duty as regards open drains, latrines, out-houses, care of animals, compound.

(b) Daily and weekly cleaning of furniture and all equipment, floor, walls, windows, wood, metals, kitchen utensils, floor coverings, furniture, glass, china, silver, cutlery, beds and bedding.

(c) Linen—required in an average home—choice, care and management. Removal of stains; washing and ironing of cotton, silk and wool.

(d) Common Household Pests—How to free a home of these pests—dangers of household pests as a menace to health and destroyer of property *i.e.* mosquitoes, cloth moths, bed bugs, cockroaches, silver fish, ants, white ants, rats, fleas, flies, grain and furniture weevils.

Practice.—

(a) Students must receive practical training in the running of a home and the cleaning of a home in a Practice Cottage.

(b) Practical training in the choice of durable materials, removal of stains, washing and ironing of cotton, silk—real and artificial, woollen garments; the making of home-made cleansing agents and insect repellents.

(c) Planning and care of a garden—trees, flowers, vegetables.

III. Income and Expenditure:

Sources of Income: Means of enhancing income; Married woman as income earner; General principles of expenditure; The value of a planned household budget.

Standards of living :—

Chief Budget items :—Housing; Food; Clothing; House-keeping expenses; Personal expenses.

Methods of Purchase :—

Household purchases; Retail shops; Public Vendors and hawkers, cash or credit purchase; marketing.

The two principles of money management and time management.

Thrift and methods of saving—Banks, Post Office, War loan, Co-operative societies.

IV. Life within the Home.—Domestic and Civic Relationships.

The family as a Social Unit. Family patterns in India. Privileges and obligations of membership of a family.

The Mother as central figure to unite and harmonise; Her relationship with husband, children, servants and guests.

Use of Leisure:—Continuance of education through use of libraries, museums, art galleries, study circles, concerts. Planned Social Service.

Entertaining:—

Civic Relationships.—Mutual obligations of the community and family.

Reference Books:

Modern Ideal Homes for India—R. S. Deshpande, B.E., A.M. I.E. (Ind). Saraswat Brahmin Colony, Poona, No. 1.

A Student's Handbook of Housewifery—A. Margaret Kaya—J. M. Dent and Sons, London.

Better Homes.—A revised abridgement of Domestic Science Book for India. Parts I and II—Needhan and Strong—Oxford University Press.

Interior Decoration—Principles—Frank Alna Parsons.
Art in Every Day Life—Goldstein and Goldstein—Macmillan Company.

Note.—There shall be two papers, the first paper of 3 hours' duration and the second paper of 2½ hours' duration.

PRACTICAL.

MOTHER CRAFT.

1. Equipment and arrangement of mother's room before confinement,
2. Preparation of food for children under two years.
3. Demonstration of treatment of minor ailments in babies.
4. *Viva voce* on other important topics under Mother Craft, *e.g.*, bathing and dressing a baby, behaviour problems in children, etc.

FOOD AND COOKERY.

1. Preparation of any food or beverage given in the syllabus.
2. Preparation of foods suitable for use in liquid, soft and light diets for the sick.
3. Table setting or Indian arrangement for serving food.
4. Arrangement of an invalid tray.
5. Calculation of calorific value for any given meal (with the help of tables of food values.)
6. Simple qualitative tests for minerals, proteins and carbohydrates.
7. Examination under the microscope of flours of some common cereals.

HOME MAKING.

1. Arrangement of furniture or wearing apparel according to principles or Art.
2. Cleaning of furniture and all equipment.
3. Removal of stains—Washing and ironing of materials.
4. Practical test for fabrics.
5. Preparation of home-made cleansing agents.
6. Identification of some common household pests.

(19) DRAWING.

Time available: 4 hours per week for 2 years (20 months).

The course shall consist of two branches.—

A. Practical Drawing and Painting.
B. History, Theory and Appreciation of Art.

A. i. Still Life.

ii. Objects in relief for appreciation of light and shade.

iii. The human figure in repose.

iv. The human figure in action.

The examination will be of 5 hours' duration—i. Still life in colour; ii. Object in relief, etc., monochrome; iii. the human figure in repose, and iv. in action, both in monochrome.

B. i. The laws of perspective.

ii. History of (a) Indian and (b) European Art.

iii. Theory and appreciation of Art, with special reference to

(a) Ajanta Frescoes, Mogul Art and Modern Indian Art.

(b) Italian, Dutch and Modern European Schools up to the end of the XIX century.

This course requires the study of a large number of reproductions in colour) of pictures.

Note.—There shall be two examinations, one a written examination of 2 hours, and the other a practical examination.

(20) INDIAN MUSIC.

Theory.

Indian Music and its place amongst the musical systems of the world. Distinctive features of Indian Music.

Detailed knowledge of the notation used in South Indian Music Svara nomenclature. Musical Terms: Nada, sruti, svara,

svaras thana and sthayi; vadi, samvadi, anuvadi and vivadi, avarta, aksharakala, matra, sangati.

The raga concept; Raga lakshana in general. Raga classification in modern music. The 72 melakarta scheme. The two nomenclatures for the 72 melas. Katapayadi formula and its application. Raga alapana. Gamakas.

Lakshana and sanchara of the following 20 ragas:—

Todi.	Mukhari.	Begada.
Mayamalavagaula.	Harikambhoji.	Bilahari.
Saveri.	Mohana.	Nilambari.
Bhairavi.	Kambhoji.	Pantuvarali.
Anandabhairavi.	Sankarabharana.	Purvakalyani.
Kharaharapriya.	Hamsadhvani.	Kalyani.
Sriraga.	Arabhi.	

The scheme of the 35 talas; Tala dasa pranas; detailed knowledge of the following five pranas.

Kriya, Anga, Graha, Jati and Laya.

Musical forms and their classification. Lakshana of the following types of musical compositions:—Gita including Lakshana Gita, Svarajati and Jatisvara, Tana Varna and Pada Varna, Kirtana, Pada, Javali, Ragamalika, Tillana, Folk Music and its characteristics.

Musical instruments and their classification. Detailed knowledge of the structure, construction and tuning of the following instruments: Tambura, Vina, Gotuvadya, Violin.

Acoustics.—Musical sounds and intervals; Pitch, Intensity and Timbre. Harmonics. Laws of vibration of stretched strings.

History.

An outline knowledge of the history of South Indian Music from the time of Purandara Das with special reference to the contributions of the following composers, and lakshanakaras including their short biographies:—

Purandaradas.	Syama Sastri.
Venkatamakhi.	Arunachala Kavirayar.
Kshetrajna.	Gopalakrishna Bharati.
Paidala Gurumurti Sastri.	Svati Tirunal.
Tyagaraja.	Vina Kuppayyar.
Muthuswamy Dikshitar.	Patnam Subrahmanya Ayyar.

Practical.—

Six ordinary gitas. The Yadukulakambhoji svarajati of Syama Sastri. Four varnas including two in ata tala, two padas and the following compositions:—

COMPOSITIONS PRESCRIBED.

1949, 1950 and 1951.

Todi.	Ambanadu.	Sankarabharana.	Edutanilachite.
Mayamalavagaula.	Vidulaku.	Hamsadhvani.	Raghunayaka.
Saveri.	Daridapuleka.	Arabhi.	Chalakalla.
Bhairavi.	Chintaya.	Bilahari.	Kamakshi.
Kharaharapriya.	Pakkala nilubadi.	Nilambari.	Matadavemi.
		Begada.	Manasuna.
Sriraga.	Vanajasana.	Pantuvarali.	Appa Ramabhakti.
Mukhari.	Sarasiruhanana.		
Harikambhoji.	Entarani.	Purva Kalyani.	Ninnu Vinaga.
Mohana.	Evarura.		
Kambhoji.	Nadamadi.	Kalyani.	Ninu Vina gati.

Note.—The compositions prescribed are only indicative of the standard expected and it is open to the Colleges to teach alternative pieces of equal standard.

As examples of compositions of equal standard, the following are suggested :—

Bhairavi—Mukhathaikkatiye.

Purvakalyani—Satre vilagi irum.

Alapana of the following twelve ragas :—

Todi, Saveri, Bhairavi, Anandabhairavi, Sriraga, Mohana, Kambhoji, Sankarabharana, Bilahari, Pantuvarali, Purvakalyani, Kalyani.

Ability to sing from sight any passage in the above twelve ragas.

In the practical examination, the candidates may offer Vocal Music or one of the following instruments :—

Vina, Gotuvadya, Violin, Flute.

Excepting the Vina candidates, other candidates shall sing or play to the sruti accompaniment of the Tambura.

Books for reference—

1. Sangita Sampradaya Pradarsini by Subbarama Dikshitar—Primer, Volumes I and II.
2. Oriental Music in European Notation—by A. M. Chinnaswami Mudaliar.
3. Music of India by Rev. H.A. Popley.
4. Music of Hindusthan by A. H. Fox Strangways.
5. Richardson—" Sound ".
6. T. S. Krishnaswami—" Sound ".

Modern Violin Technique by Thistleton.

8. " Thyagaraja " by M.S. Ramaswami Ayyar.

9. "Thyagaraja Hrudayam" Volumes 1—3 by K. V. Srinivasa Ayyangar.
10. Bharata Sangita Swayambodhini by T.C.R. Johannes.
11. "Sound" by Nightingale (Bell & Sons).
12. The Melakarta Janyaraga Scheme by P. Sambamurthi. (The Indian Music Publishing House, G. T., Madras.)
13. Swaramanjari.
14. Gayaka Parijatam.
15. Sangita Kalanidhi.
16. Gayaka Siddhanjanam, Parts I and II.

(13–16) by T. Singaracharlu.

17. Sangita Chintamani by K. V. Srinivasa Ayyangar.
18. Sangita Sudhambudhi by. K. V. Srinivasa Ayyangar.
19. Svaramelakalanidhi edited by M. S. Ramaswami Ayyar, (Annamalai University Publication).
20. Varna Malika by K. Ramachandran. (Messrs. V. Ramaswamy Sastrulu & Sons, Esplanade, Madras).
21. Kirtanasagaram, Books I—IV by P. Sambamurti. (The Indian Music Publishing House, G. T., Madras).
22. Chaturdandiprakasika published by the Music Academy, Madras.
23. Ganabhaskara by K. V. Srinivasa Ayyangar.
24. Syamasastri and other Composers by P. Sambamurti.
25. Guruguha Ganamrta Varshini by Vedanta Bhagavatar.
26. Songs by T. Lakshmana Pillai.
27. Acoustics in Tamil by R. K. Visvanathan.
28. Dikshitar's Compositions by Nataraja Sundaram Pillai.
29. South Indian Music, Books 1 to 4 by P. Sambamurti.
30. Nowka Charitra of Tyagaraja, edited by P. Sambamurti.
31. Ganakalachandrika by A. Satyanarayanamurti.
32. The 72 Melaragamalika of Maha Vaidynantha Ayyar, edited by Sabhesa Ayyar.
33. Tanjai Peruvudayan Perisai by K. Ponniah Pillai.
34. Sangita Sudha, Tamil translation of Chaturdandiprakasika and Sangita Saramrta, published by the Music Academy, Madras.
35. Grammar of South Indian Music by C. S. Iyer.
36. Sangita Lakshana Sangraha by A. S. Murti.
37. Tala Dipika by K. Ramachandran.
38. Purandaramanimala by Lalitangi.
39. "Flute" by P. Sambamurti, Second Edition.
40. Sangita Martanda.

(21) WESTERN MUSIC.

Theory.—

Syllabus of the Intermediate Division of Trinity College of Music.

Practical.—

Syllabus of the Senior Division of Trinity College of Music.

NOTE.—The syllabuses are obtainable from the Local Secretary.

(22) ELEMENTS OF COMMERCE AND ACCOUNTANCY.

Accountancy.

1 Book-keeping: its principles and practice by means of Double Entry—Accounts of trading concerns—The use of subsidiary books—Cash book, petty Cash book and Bank Reconciliation statements—Rectification of errors and adjustment entries—Preparation of final accounts—Manufacturing, Trading and Profit and Loss Accounts and Balance Sheet.

2 Distinction between Capital and Revenue.

3 Receipts and Payments Account—Income and Expenditure Account.

4 Bills of Exchange and Consignments.

5 Depreciation methods—

(a) St. Line Method.

(b) Reducing instalment method.

(c) Revaluation Method.

6 Distinction between Single and Double Entry—ascertainment of profits under Single Entry system.

7 Partnership accounts—Simle problems on Adjustments on Admission of partners—treatment of Goodwill—and dissolution of partnerships.

8 Joint Stock Companies—Formation—issue, allotments and calls of Shares and debentures—Forfeiture and reissue of Shares—preparation of final accounts.

Books recommended—

1 First steps in Double Entry Book-keeping—J. R. Batliboi.

2 Complete Commercial Book-keeping—Arthur Fieldhouse.

Commerce.

1 Commerce and its Economic Basis.

2 Industrial and Bussiness Oganisations: Types of Business—Sole Trader—Partnership—Joint StockCompanies and ElementaryPrinciples of Co-operative Organisation.

3 Instruments of credits—Cheques—pro-notes—Bills of Exchange—Elementary functions of Banks in relation to commerce.

4 Documents of title to Goods and their use.

5 Chief methods of Transport—Roads—Railways—Canals and Rivers.—

(a) Sea, air and post and the part they play in Commerce.

(b) Shipping Documents and Customs formalities.

6 Office organisation: Method of Accounting—Correspondence—Different systems of filing and indexing.

7 Organisation of Trade—Wholesale—Retail—Agency Business—Marketing—Advertising.

8 Chambers of Commerce and other institutions for the promotion of trade.

9 Important commercial terms and abbreviations used in above.

Books recommended—

1 Stephenson : Principles and practice of Commerce.

2 Evelyn Thomas : Theory and Practice of Commerce.

3 J. C. Mitra : Theory and Practice of Commerce and Business Organization.

(23) ECONOMIC GEOGRAPHY AND ECONOMIC HISTORY.

(a) *Economic Geography.*

1. General World Geography.

Physical basis of Geography, structure and soil relief and drainage—climate and rainfall—natural vegetation—major natural regions of the world—population, its distribution and density.

2. Chief world commodities—their distribution and conditions of production, relative supply and markets. Foodstuffs of animal and vegetable origin—mineral products—raw materials of industry.

3. Chief world industries and their regional distribution, special attention being paid to textile, iron and steel, ship-building and chemical industries—sources of mechanical power.

4. Transport—inland and oceanic—relation to hinterlands and market—world ports and trade routes—immigration and colonisation.

Text-Books

1. Dudley Stamp—Intermediate Commercial Geography. Longmans).

2. Macfarlane—Economic Geography.

(b) *Economic History.*

A general survey of industrial and commercial developments in Great Britain.

1. The natural and human foundations of Britain's economic pre-eminence—The manorial system and mediaeval agricultural conditions—Guilds and handicrafts—Mediaeval trade—Break-down of mediaeval economy—Enclosures and social changes—Rise of national unity, the mercantile system—English industries in 1700—The influence of foreign immigrants—The East India Company and its economic influence on England.

2. The Industrial Revolution and its social and economic effects—Rise of cotton and iron industries—Agricultural Reform and agrarian changes—New transport methods—Steamship and Railway. Commercial Revolution. Poor relief, factory reform and public health legislation—Tariff policy—Growth of Banking. Labour movement. Commercial Revolution. Decay of English agriculture and efforts at its resuscitation.—Growth of State regulation—Economic effects of the World War.

Text-Books—

1. Sir W. Ashley—The Economic Organisation of England.

2. M. D. Stocks—The Industrial State.

For reference only—

Lipson : The Economic History of England—Middle Ages.
Knowles : The Industrial and Commercial Revolutions in Great Britain during the 19th Century.

(24) SYLLABUS FOR MILITARY SCIENCE—CERTIFICATE 'A'.

[NOTE :—*The subject may be offered by members of the Madras University Officers' Training Corps as one of the Optional Subjects or as an additional subject under Part III of the Intermediate Examination.*]

General.

The examination will be taken in two parts, Part I of which is designed to test the cadet's military knowledge and Part II to test his ability as a leader.

PART I.

1. SQUAD DRILL WITHOUT ARMS.

The object of this is to test the precision and bearing of cadets in a squad and not their capacity as instructors. Examining officers will pay particular attention to the efforts which candidates make to carry out the movements required of them in a smart and soldier-like manner, and will not necessarily demand absolute accuracy of detail. Lack of confidence and self assurance on the part of any candidate will be penalised.

Movements.

The fall-in—position of attention—stand-at-ease—turning at the halt—dressing—marching in quick time—turning on the march—marking time—forward in quick time—open order—saluting at the halt and on the march—changing of direction by wheeling—dismissing.

Reference: Manual of Elementary Drill, Chapter II as amended by M.T.P. 18, Section 2.

Note:—Each squad will consist of not more than four files and will be drilled by an officer or cadet N.C.O. detailed by the contingent commander. When possible drill will be carried out on a hard parade ground.

2. WEAPON TRAINING.

The object of this is to test a cadet's knowledge of the care and use of the rifle, and not his ability to instruct or command.

(a) *Rifle*

Questions will be asked on mechanism, trigger pressing—daily cleaning—loading and unloading—aiming—lying position—cleaning before and after firing, and cadets will be tested in T.O.E.T No. 1 and either No. 2, 3 or 4.

Reference: S.A.T. Volume 1, Pamphlet No. 3, lessons 2, 3, 4, 5, 6 and 10.

(b) *Observation Training.*

Questions will be asked on method of searching ground, locating service, targets—judging distance—recognition of targets. Cadets will be tested in T.O.E.T. No. 9.

Reference: S.A.T. Volume 1, Pamphlet No. 2, lessons 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11.

3. MAP READING.

The object is to test the candidate's practical knowledge of the one inch map. Questions will be asked on conventional signs, definitions, scales, contours, north points, and bearings and all candidates will be required to locate a grid reference on a map.

Reference: Elementary Map Reading 1941, Chapters 2, 3, 4, 6 and 7.

FIELD CRAFT.

The object is to test candidates in a practical application of their knowledge of basic individual field craft and field intelligence.

Candidates will be tested in :—

(i) Observation (Reference I.S.L. 1941, Section 47, M. T. P. No. 33, Section 12).

(ii) Concealment (Reference I.S.L. 1941, Sections 39, 40, 41, M.T.P. No. 33, Sections 8, 9 and 13.)

and will be questioned on :—

(i) Duties of scouts (Reference I.S.L. 1941, Sections 44 and 71, M.T.P. No. 33, Section 31.)

(ii) Duties of sentries (Reference I.S.L. 1941, Section III, M.T.P. No. 33, Section 20.)

(iii) Signals with rifle (Reference I.S.L. 1941, Appx. 42.)

(iv) Bn. Signal Code (Reference I. S. L. 1941. Appx. I.)

(v) Morse Code (Referenee I. S. L. 1941. Appx. J.)

The tests should be carried out on the training ground, but if this is impossible, they may be adapted to take the form of an indoor test.

MARKING

100 Marks will be awarded for Part I of the Examination and will be allotted as follows :—

Drill ...	... 30%
Rifle ...	... 10%
Observation Training	... 10%
Map Reading ...	... 20%
Field Craft ...	... 30%

In order to pass, a cadet must obtain 50% of the total marks but not less than 40% in any one subject.

PART II

1. DRILL.

The object of this is to test the candidate's powers of command. Candidates will be required to take command of and drill a squad either with or without arms and to detect and correct faults.

Particular attention will be paid to the self-confident bearing and word of command of candidates as well as to the correctness or otherwise of the words of command.

The squad should if possible be provided by cadets who are not taking the examination.

References:

M. O. E. D. Ch. II, and Sections 43, 54, 85.

M. T. P. No. 18, Section 2.

M. T. P. No. 19, Annexure 'A'.

I. A. O. No. 283/41 as amended.

2. WEAPON TRAINING.

The object of this is to test the candidate's ability to control the fire of a rifle section.

Candidates will be tested on indication of targets and fire control orders. Each candidate will prepare a range card.

Reference:—S. A. T. Volume I, Pamphlet No. 2, Lessons, 8-15 and Appx. 'C'

I. S. L. 1941 Chapter VIII.

3. MAP READING.

Candidates will be tested in their knowledge of the elementary practical use of the compass and service protractor. Each candidate will be required to set a map and to demonstrate his ability to use the compass and the service protractor.

Reference:—Elementary Map Reading 1941, Chapters 8-11.

4. LEADERSHIP.

(a) *Organization*:—A candidate will be tested on his knowledge of battalion organization, infantry weapons and supporting arms. (I.S.L. 1941, Chapters V, VI, VII).

(b) *Section Leading*:—A candidate will be tested on the Tactical handling of a section in a situation outlined by the examining Officer.

All candidates will be required to:—

(i) give verbal orders as section commanders;

(ii) move a section in the most appropriate formation over given piece of country;

(iii) give verbal and written messages.

Where suitable ground is not available, the tests may be carried out on a sand table.

Reference: I.S.L. Ch. X, Ch. XIII, Ch. XIV, Sections 66-70, M.T.P. No, 33, Sections 23, 26, 27 and 28.

MARKING.

100 Marks will be awarded for the examination and will be allotted as follows:—

Drill ...	... 20%
Rifle ...	... 20%
Map Reading ...	... 20%
Organization ...	... 10%
Section Leading...	... 30%

In order to pass, a cadet must obtain at least 50% of the marks in each subject.

Text-books for the Examinations of 1949.

ENGLISH.

1949.

Shakespeare.—A Midsummer Night's Dream.

Poetry.—An Anthology of Longer Poems, Edited by T. W. Moles and A.R. Moon (Longmans). The following selections are alone prescribed: Goldsmith—The Deserted Village. Wordsworth—Resolution and Independence. Tennyson—The Lotos Eaters. Flecker—Gates of Damascus. Gibson—The Lodestar.

Prose for detailed study.—(1) Intermediate Prose, Edited and Annotated by Miss C. Thankam and published by M. R. Appadurai, Madras, omitting essays 1 & 2. (2) Coverley Papers, Ed. Myers, Oxford University Press.

Prose for non-detailed study.—(1) Dickens—Oliver Twist. Herbert Strang's Library, Oxford University Press. (2) Humayun Kabir—Men and Rivers, Hind Kitabs, Bombay. (3) Prof. A. M. Low—Science in Industry, Oxford University Press.

SANSKRIT.

1949.

PART II.

1. Nagananda of Harsha.

2. Raghuvamsa, Cantos 14 and 15.

3. Kadambari-Sangraha by R. V. Krishnamacharya from the beginning up to the meeting with Mahasveta (the passage that ends the portion closes as follows: Pratipannapasupatavratam Kanyakam Dadarsa, on page 66 of the Edition of 1936, Balamanorama Press, Madras).

PART III.

Lower Standard.

Hitopadesa (Kale's edition)—Whole.

Sri Krishnavilasa of Sukumara Kavi, Cantos II and III.

Higher Standard.

Laghukaumudi (portions relating to Samjna, Svarasandhi, Halsandhi and Visargasandhi only).

Kiratarjuniya of Bharavi, Cantos I, II and III.

Bhasa's Pratimanataka.

Harsa's Ratnavali.

Kadambarisangraha from the beginning to the end of Sukanasopadesa.

MARATHI.

1949.

PART II.

Non-detailed Study:

(1) Shyamchi Aye by Sane Guruji.

(2) Pikali Pane by Kanekar.

Detailed study.—Prose.—(1) Vichara Saundarya by V. M. Joshi, pages 1 to 114. Swastik Publishing House, Bombay No. 4. (2) Dhumra Valaya by Prof. Phadake.

Poetry.—(1) Maharashtra Meghduth by S. A. Sabnis, New Bhatawadi, Girgaon, Bombay 4.

(2) Following extracts from Navaneet:

(*a*) Moropant—Uttaragograhan.

(*b*) Vamanpandit: Bharatabhava.

Drama: Vidyaharan by Khadilkar.

Grammar: General Principles of Grammar and Prosody with reference to the texts.

Books recommended:—

1. Chando Rachana by Dr. Patvardhan (Small Edn.).
2. Vritta Darpan by P.T. Godbole.
3. Marathi Sahitya va Vyakarana by Mone.

PART III.

Lower Standard.

Detailed Study:

Prose: Mee by H. N. Apte (Abridged).

Poetry: Following extracts from Rasa Tarangini by Prof. Pendse:—

(1) Yaksha Sandesh by Krishna Sastri Chiplunker.

(2) Shuska Gulab by N. W. Tilak.

(3) Rangoli Chalatana Pahoon by Keshav Sut.

(4) Kunja Koojan by Chandra Shekar.

Non-detailed study:

Prose: Pakalya by V. S. Khandekar.

Grammar and Composition :

Books recommended :

(1) Marathi Sahitya va Vyakarana by Mone.
(2) Nibhanda Lekhana ani Anuwada by V. V. Bhide.

Higher Standard.

Detailed study :

Prose :

(1) Smrti Lahari by V. M. Joshi.

(2) Dristiadachya Sristit by Shyama.

(3) Bhangalele Dewoola by Madkholkar.

Poetry :

(1) Nala-Damayanti Swayamvarakhyan by Raghunath Pandit.
(2) Kekavali by Moropant, Edited by Prof. Priyolkar.
(3) Following extracts from Arwachin Marathi Kavita, Part I—

(*a*) Anyokti Sangrah by Krishna Sastri Chiplunker.

(*b*) Shokavarta by Lambhe.

(*c*) Sasarachi Pathawani by K. N. Athalya.

(*d*) Ambari by Cirishe.

Drama : Keechak-Wadha by Khadilkar.

Non-detailed study :

(1) Donadhruva by Khandekar.

(2) Brahman va Tyanchi Vidya by Gole.

Grammar and History of Literature :

(1) Maharashtra Saraswata Bhaga Pahile, by V. L. Bhave (pages 1—360).

(2) Marathi Sahitya va Vyakarana by Mone (pages 1—128 and pages 165—202).

HINDI.

1949.

PART II.

Prose:

Hindi Madhuri, Part II, published by Dakshina Bharat Hindi Prachar Sabha, Madras, omitting essays. 2. Kranti, 4. Ityadi ki Atma Kahani, 13: Badla, 15. N.R.K. Chitthee.

Poetry:

(1) Phulwari (D. B. Hindi Prachar Sabha, Madras) omitting Dusari Kyari.

(2) Rang me Bhang—by Maithili Saran Gupt.

Non-detailed:

(1) Hazarat Muhammad by Pt. Sunderlal (D. B. Hindi Prachar Sabha, Madras.)

(2) Nav Pallav (D. B. Hindi Prachar Sabha, Madras) First 7 stories only.

PART III.

Lower Standard.

The same as for Part II, omitting the texts in Poetry.

Higher Standard.

Paper I:

Drama:

Chandragupt by Jai Sankar Prasad.

Nurjahan by D. L. Roy.

Paper II:

Poetry:

Chayanika, published by the D. B. Hindi Prachar Sabha. (Poems of Ayodhyasinh Upadhyay, Guru Bhakt Sinh, Subhadra Kumari Chauhan, Maithilisaran Gupt, Dinakar, Mahadevi Varma and Sumitranandan Pant only).

Ramacharitmanas by Tulsidas.

Books for consultation in Poetics, etc:

Hindi Padyaracana by Ramanares Tripathi.

Acchi Hind by Ramachandra Varma.

BENGALI.

1949.

PART II.

Intermediate Bengali Selections (latest): (Calcutta University).

The following books are recommended as showing the standard up to which candidates are expected to have read.—

Akshay Chandra Sarkar	...	Sahitya-Sadhana.
Rabindranath Tagore	...	Vichitra Prabandha.
Vivekananda	...	Prachya O-Paschatya.
D. L. Roy	...	Mandra.
Rajani Kantha Sen	...	Bani.
Kedarnath Bandopadhyaya	...	Chin-Jatri.
Kaliprasanna Dasgupta	...	Samskrita Nataker Galpa.

Book recommended on Grammar:

Suniti Kumar Chatterji	...	Bhashaprekash-Bangla Byakaran (Calcutta University.)

LATIN.

1949.

PART II.

Vergil: Aeneid, Bk. I.

Cicero: Pro Archia.

Livy: Book III.

FRENCH.

1949.

PART II.

Watson Bain's French Poetry for Students Nos. 1 to 20 (Macmillan).

Racine: Athalie.

A. Daudet: Letteres de mon Moulin. Edited by Bradby and Rieu (O.C.P.).

Jules Verne: De la Terre a la Lune. Edited by R.Y.T. Currall (Harrap).

PART III.

Lower Standard.

The same as under Part II with the omission of Racine's Athalie.

Higher Standard.

Edmond About : Le Rois Des Montagnes (Bell).

Moliere : L'Avare.

Dumas : Pages Choisies by Templeton (O. C. P.).

GERMAN.

1949.

PART II.

Aus dem Leben eines Unglucklichen by Hansjakob (Macmillan & Co.)

Modern German Short Stories (II Series), selected and edited by H. F. Eggeling (O.C.P.) (Omitting Johann Burgstallers Photographiescher Apparat by Karl Hans. Strobl).

German Poetry for Students, edited by A. Watson Bain (Macmillan & Co.,) Nos. 22-35, 38-44, 128-153.

HEBREW.

1949.

PART II.

Texts :—

The Book of Zachariah.

Exodus : Chapters I to XX.

Grammar :—

Students' Hebrew Grammar by Rev. Michael Adler, David Nutt, London.

PART III.

Lower Standard.

The same as those prescribed under Part II.

Higher Standard.

(1) Book of Ecclesiastics (Koheleth) whole.
(2) Isaias—Chapters I-XVI (both included).
(3) Deuteronomy Chapters I-X (both included).
(4) Grammar - Davidson's Hebrew Grammar.

SYRIAC.

1949.

PART II.

(1) The Gospel of St. Mark (Chapters IX—XVI). (2) The Acts of the Apostles (Chapters I—IV). (3) The History of the Syrian Church in India.

The following books on Grammar are recommended :—

(1) Syriac Grammar by Fr. Gabriel, T.O.C.D. (St. Joseph's Press, Mannanam P.O., Travancore.) (2) Paradigms and Exercises in Syriac by T. H. Robinson. (Clarendon Press, Oxford.)

The following books are recommended for the study of the History of the Syrian Church in India :—

(1) The Mar Thoma Christians, Volumes I and II by the Rev. Fr. Bernard, T.O.C.D. (St. Joseph's Press, Mannanam P.O., Travancore) (2) The Indian Church of St. Thomas by Mr. E. M. Philip (C.M.S. Press, Kottayam P.O., Travancore) (3) St. Thomas, the Apostle in India by F. A. D'Cruz, K.S.G. (Hoe & Co., Madras).

PART III.

Lower Standard.

The same as those prescribed under Part II.

Higher Standard.

(1) First Book of Samuel—Whole.

(2) Psalms : 136—150 (both included).

(3) First Epistle to Thimothi.

(4) Second Epistle to Thimothi.

ARABIC.

1949.

PARTS II AND III.

Prose and Poetry :—

Majaniul-adab—Volume I, pages 26 to 165.

Azharul-Arab—pages 1 to 24 and 65 to 80—new edition.

Grammar :—

Thatcher's Arabic Grammar or Asasi-Arabi.

PERSIAN.

1949.

PARTS II AND III.

Prose and Poetry:

Gulistan—Chaps. 2 and 3.

Ain-i-Ajam by Dr. Mohd. Iqbal.

Diwan-i-Hafiz—First seven ghazals in Radif-i-Alif.

Grammar by Sufi Abdul Aziz.

URDU.

1949.

PART II.

Prose and Poetry—Jadid-Nisab-i-Urdu. (Published by Central Publishing House, Bangalore).

Non-detailed:

1. Kimiyagar Aur Afsanay by Prof. Mujib.
2. Tufan-i-Hayat by Rashid-al-Khayri.

PART III.

Lower Standard.

Prose and Poetry:

Nisabi Urdu.

Sanjug.

Higher Standard.

Ibnul Waqt.

Nayrangi Khiyal.

Intikhabi Jadid by Anjuman-i-Taraqqi-i-Urdu.

TAMIL.

1949.

PART II.

Poetical Selections: (Published by the University).

(1) Tirukkural—Arattupal—Chapters 5-9.

(2) Manimekhalai—Atirai Pitchai Yitta Katai—200 lines.

(3) Villi Bharatam—Kandavadahanaccarukkam—200 lines.

(4) Tiruvilaiyadal Puranam—(Paranjoti) Mansumantapadalam—200 lines.
(5) Kurrala Kuravanchi—100 lines.
(6) Tempavani—Valan Sanitta Padalam—80 lines.
(7) Purananuru—100 lines.
(8) Kambaramayanam—Sundarakandam—Tiruvadi Toluda Padalam—300 lines.
(9) Kalingattupparani—40 lines.
(10) Bhagavatam—Prthu Mannan Kathai Uraitta Adhyayam—240 lines.

Detailed Prose.—(1) Karuttum Ezuttum (omitting essays 15 & 16)—By M. Balasubrahmanya Mudaliyar, 35, Andiappa Naicken Street, Choolai, Madras. (2) Ceran Cenkuttuvan—By M. Raghava Ayyangar, Professor of Tamil, Travancore University, Trivandrum.

Non-detailed Prose.—(1) Periyalvar Penkodi—By Panditai Krishnaveni Ammal, Sri Vaishnava Maha Sangam, Nagappier Street, Tiruvattees-waranpet, Triplicane. (2) Keechakan—By C. R. Namasivaya Mudaliyar, C.R.N. & Sons, 1-8, Srinivasier Street, G. T., Madras.

PART III.

Lower Standard.

Rupavathi—V. G. Suryanarayana Sastriyar—Swaminathan, Booksellers.

Prathapa Mudaliyar Charitram—Vedanayakam Pillai.

Tamil Essays—T. Chelvakesavaraya Mudaliyar.

Kalingattuparani—40 lines.

Kambaramayanam—Tiruvaditoluta Padalam—300 lines.

Kutralakkuravanchi—100 lines.

Tiruvilaiyadal (Paranjoti)—Mansumanta Padalam—200 lines.

Villi Bharatam—Kandavadahanaccarukkam—200 lines.

Tirukkural—Arattupal—5 to 7 Chapters.

Sevvaiccuduvar—Bhagavatam—240 lines.

Higher Standard.

Manonmaniyam, Acts 1 to 3 (both inclusive).

Kamban—An Essay by T. Chelvakesavaraya Mudaliyar.

Katturai Thirattu—By N. M. Venkataswami Nattar.

Silappadhikaram—Maduraikkandam—Whole.

Muttollayiram—1-50 stanzas.

Tirikadukam—1-50 stanzas (with introduction and Palaya Urai)—Madras University Publication.

TELUGU.

1949.

PART II.

Old Poetry: (1) Bharatam, Adiparvam, Canto 8, Verses 90—213: "Arjununi Tirthayatra — Subhadra Vivahamu", 124 Verses.

(2) Bhagavatam, Canto 9: "Ambarishopakhyanamu", 72 Verses.

(3) Haravilasamu, Canto 3, Verses 29-97: "Kamadahanamu", 68 Verses.

Modern Poetry.—(4) Kadambari by Addepalli Naga Gopalarao, Bezwada, I Part.

Drama.—(5) Vikramorvaseeyamu by Vedam Venkatraya Sastri.

Prose: (6) Prabhanda Kathalu by Sannidhanam Suryanarayana Sastry, Mahbub College, Secunderabad.

Non-detailed.—(7) Andhradesamu Videsayatrikulu by B. V. Krishna Rao, Member, Religious Endowments Board, Madras.

SYLLABUS IN TELUGU GRAMMAR, PROSODY AND POETICS.

GRAMMAR.

1. Telugu Alphabet: Vowels and consonants. Ubhayamulu, short, long, hard consonants, soft consonants and sthiras.

2. Words.—Five kinds: Nouns, Pronouns, Adjectives, Verbs, Indeclinables. Their characteristics.

3. Changes in pure Telugu words: G—V; Ayi—Ai; Avu—Au; Iya—e—.

4. Kala and Drutaprakritika.

5. Sandhi—Telugu.—(i) Akārasandhi; Ikārasandhi; Ukārasandhi; Amrēdita sandhi—Yadāgama. (ii) Drutaprakritika sandhi. (iii) A. Gasadadavādesa sandhi. B. Tugāgama sandhi. C. Dwirukta takāra sandhi. D. Nugāgama sandhi. E. Pugāgama sandhi. F. Vākyanta sandhi.

6. Sandhi.—Sanskrit—(1) Savarna dirgha sandhi. (2) Guna sandhi. (3) Vriddhi sandhi (4) Yanādesa sandhi.

PROSODY.

7. (1) Characteristics of Guru and Laghu, (2) (i) Matra ganas, (ii) Akshara ganas, (iii) Surya ganas, (iv) Indra ganas. (3) Yati and Prasa—Their characteristics. (4) Kanda, Thetageeti, Ataveladi, Sisa, Dwipada, Utpalamāla, Champakamāla, Sārdūla, Mattēbha—Their characteristic features.

POETICS.

8. Upamā, Rūpaka, Utprēksha, Atisayōkti, Swabhāvokti, Ardhāntaranyāsa, Pārikara, Virōdhābhāsa, Yadhāsankhyā.

PART III.

Lower Standard.

The same as under Part II, omitting Old Poetry.

Higher Standard.

Poetry: Vijayavilasam by Chemakura Venkata Kavi.

Drama:

Veni Samharam by Vaddadi Subbarayudu.

Pandavodyogam by Tirupati Venkata Kavulu.

KANNADA.

1949.

PART II.

Old Poetry.—Lakshmisa's Jaimini Bharata; sandhis 1, 2 and 3, *omitting* stanzas 7, 9 to 13 in sandhi 3. Yasodhara Charitre Sangraha (Mysore University Publication)—Avataras 1 and 2.

Modern Poetry.—From Srimukha (Kayyar Kinhanna Rai, Kannada Pandit, Navajeevan High School, Perdala, S. K.). The following poem: 'Eeduvem Chandravamsada Kudiya Kapadu.'

Detailed Prose.—Dhuma Ketu (K. Sankara Bhat, St. Agnes' College, Mangalore).

Drama.—Abhisheka Nataka by Nanjundaswami (Pavanje Guru Rao & Co., Udipi, S. K.).

Non-detailed study.—(i) Indina Karnataka: Edited by Prof. V. N. Gokak (Manohar Grantha Bhandar, Dharwar). (ii) Parvathee by N. V. Kuradi (Author, Dharwar).

PART III.

Lower Standard.

The same as undor Part II. with the following changes :—

Omit under Old Poetry the two selections from Jaimini Bharata and Yasodhara Charitra Sanghraha and *add* "Vainatheya Upakhyana" (Bharata by Thimmanna Kavi).

Higher Standard.

Paper I.

Classical Poetry:

(1) Sabara Sankara Vilasa (first three aswasas).

(2) Adbhuta Ramayana.

Paper II.

Drama:

(1) Vikramorvasiya (Ayya Sastry).

(2) Duta Vakya (H. Sesha Ayyangar)—Sree Vatsa Press, Royapetta, Madras.

MALAYALAM.

1949.

PART II.

Non-detailed study.—(1) Sarada, Part I, by O. Chandu Menon, V. V. Publishing House, Tycaud, Trivandrum. (2) Nammute India by P. Sankaran Nambiyar, Oxford University Press, Madras.

Detailed study—Poetry.—(1) Adhyatma Ramayanam—Kishkinda-kandam—Ezuttaccan. Any Press. (2) Dhruva Charitam—Tullal by Kuncan Nambiar. Any Press. (3) Virasrinkhala—Vallathole, Cheru-thuruthi, Cochin State. (4) Nalini—Asan c/o Mrs. Asan, Sarada Book Depot, Chakkey, Trivandrum.

Drama.—Malavikagnimitram by A. R. Raja Raja Varma, M.A., B. V. Book Depot, Trivandrum.

Prose.—(1) Gadyasumavali—Edited by A. Balakrishna Pillai—Padmalaya Book Depot, Ernakulam. (2) Kuncan Nambiar by T. M. Chumar, Ernakulam. (3) Sahitya Sahyam—up to Kritiprana-yanam by A. R. Raja Raja Varma, M.A.

PART III.

Lower Standard.

(1) Sarada.

(2) Nammute India.

(3) Dhruva Charitam.

Higher Standard.

(Will be prescribed later, if necessary).

Text-books for the Examinations of 1950.

ENGLISH.

1950.

Shakespeare: A Midsummer Night's Dream.

Poetry—Three Hundred Years of English Poetry—Edited by A. Mendeloff (Blackie & Son), the following selections:

Gray: Elegy written in a Country Churchyard.

Cowper: On the Receipt of My Mother's Picture.

Wordsworth: Sonnets.

Rosetti: The White Ship.

Morris: The Life and Death of Jason.

Newbolt: He Fell among Thieves.

Noyes: The Highwayman.

Hodgson: The Bull.

Prose for detailed study:

(1) Miss C. Thankam—Intermediate Prose. M. R. Appadurai—Omitting essays 1 and 2.

(2) Macaulay: Essay on Addison. Ed. R. F. Winch (Macmillan).

Prose for non-detailed study:

(1) Jim Corbett—Man-eaters of Kumaon—(Oxford University Press).

(2) Dickens—Great Expectations—Herbert Strang—(O.U.P.)

(3) A. T. Quiller-Couch—The Roll Call of Honour—(Nelson).

SANSKRIT.

1950.

PART II.

The same as for 1949, except that for Kadambari Sangraha, the following book is substituted:—

Mudrarakshasa Nataka Katha, Tanjore Saraswati Mahal Series, edited by Dr. V. Raghavan.

PART III.

Lower and Higher Standards.

The same as for 1949.

MARATHI.

1950.

PART II.

Non-detailed: 1. Shamchi Aye by Sane Gurugi.
2. Wayaphalacha Mala by C. V. Joshi.

Detailed Prose: The same as for 1949.

Detailed Poetry: The same as for 1949.

Drama: Sattecha Gulam by Warerkar.

Grammar: The same as for 1949.

PART III.

Lower and Higher Standards.

The same as for 1949.

HINDI.

1950.

PART II.

1. *Detailed Prose*:

Gadya Sushama, edited by Ramdhan Sarma and published by Hindi Bhavan, Lahore—omitting pieces named Kabirdas, Tai, Hindi Sahitya Aur Musalman Kavi, Rupya, Sahitya Ki Mahatta, Samaj Aur Sahitya, Dinompar Prem, Gadya Aur Padya and Asa.

2. *Detailed Poetry*:

Phulwari, published by D. B. Hindi Prachar Sabha—omitting Dusri Kyari.

3. *Nod-detailed*:

(i) Nav Pallav, published by D. B. Hindi Prachar Sabha.

(ii) Bharat Ki Vibhutiyan by Paripurnanand Varma, Published by Ramprasad & Sons, Agra—Omitting first part, Dharmic Neta and last part, Rajnitic Neta.

PART III.

Lower and Higher Standards.

The same as for 1949.

LATIN.

1950.

PART II.

Vergil: Aeneid—Book I.

Cicero: Pro Milone.

Livy: Book III.

FRENCH.

1950.

PART II.

French Poetry for Schools, edited by J. Boielle (Longmans), Nos. 63 to 92 inclusive.

Racine: Athalie.

A. Daudet: Letteres de mon moulin. Edited by Bradby and Rieu (O. C. P.)

Jules Verne: De la Terre a la Lune. Edited by Currall. (Harrap)

PART III.

Lower Standard.

The same as under Part II omitting "Athalie."

Higher Standard.

The same as for 1949.

GERMAN.

1950.

The same as for 1949.

HEBREW.

1950.

PART II.

Prose:

Book of Joshua: Chapters I—XV (inclusive).

Poetry:

Book of Micah.

PART III.

Book of Genesis : Chapters XXXIX—L (inclusive).

Poetry—Psalms XXXVI—XLI (inclusive).

SYRIAC.

1950.

PARTS II AND III.

The same as for 1949.

ARABIC, PERSIAN, AND URDU.

1950.

PARTS II AND III.

The same as for 1949.

TAMIL.

1950.

PART II.

Poetry :

1. Tirukkural—Aratuppal—Chapters 5—9.
2. Manimekalai—Adiraipitchaiyitta katai.
3. Villi Bharatam—Kandavadahana carukkam.
4. Tiruvilaiyadal—Pittukku Mansumanda Padalam.
5. Kurralakkuravanchi.

(Items 1–5: The same as for 1949.)

6. Purananuru—Stanzas 87, 89, 90 to 95, 99, 100, 101, 231, 232 and 235.
7. Kambaramayanam—Chulamanippadalam (omitting stanzas 1 and 43 to 53).
8. Kalingattupparani—Kalambadiyatu—Verses 1 to 31, omitting 8 and 12.
9. Mukkudal Pallu—Stanzas 19 to 26, 34 and 35.
10. Irakshanya Yatrikam—Irakshanya Charita Padalam, Stanzas 1, 2, 305 to 311, 314 to 321 and 335 to 343.
11. Tanippadal—Peruntogai—Stanzas 1180, 1181, 1188, 1190 and 1192.

Detailed Prose :

1. Katturai Tirattu, Part I, omitting essay No. 8, on Astronomy by N. M. Venkataswamy Nattar.
2. Purananuru Katturaikal (Presidential Address and Essays Nos. 1, 5, 6 and 10)—Publishers, S. I. S. S. W. P. S., Madras.

Non-detailed Prose:

1. India Sirpangal by R. S. Rukmani, Palaniappa Bros., Trichinopoly.
2. Kalavalli—Drama—omitting pages 84 and 85, A. Shunmugha Velu. [From the author, c/o Jayalingam Store, Arokianatha Pillai Street, Pollachi (S.I.Ry.).]

PART III.

The same as for 1949.

TELUGU.

1950.

PART II.

Old Poetry:

1. Dushyanta Charitram—From "Bharatam", Adiparvam, Canto 4, Verses 1 to 104.

   (As per University Intermediate Selections, No. 3.)

2. Visruta Charitra—From Ketana's "Dasakumara Charitra," Cantos 11 and 12. 108 verses.

   (As per University Intermediate Selections, No. 48.)

3. Vyasudu Kasini Bayuta—From Srinatha's "Bhimeswara Puranam," Canto 2, 77 verses.

   (As per University Intermediate Selections, No. 50.)

Modern Poetry:

Veera Viharamu by Sishtla Lakshmikantha Sastry. Published by Rama & Co., Ellore.

Drama:

Vikramorvasiyam by Vedam Venkataraya Sastry. Published by V. V. Sastry & Bros., No. 4, Mallikeswara Lane, Lingi Chetty Street, Madras.

Prose:

Samskrita Nataka Katha Saramu, Part I by Kottapalli Surya Rao. Published by Aryan Book Depot, Rajahmundry.

Non-detailed:

Veera Puja, by Venkata Parvateeswara Kavulu. Published by Andhra Pracharini Grandhamala, Cocanada.

PART III

Lower Standard.

The same as for Part II, deleting Visruta Charitra and Vyasudu Kasini Bayuta under Old Poetry.

Higher Standard.

The same as for 1949.

KANNADA.

1950.

PART II.

Old Poetry:

1. Lakshmisa's Jaimini Bharata: Sandhis 1, 2 and 3, omitting stanzas 7, 9, 23 and 29 in Sandhi 3. In all 117 stanzas or 702 lines.
2. Yasodhara Charitra Sangraha (Mysore University Publication). Avataras 1 and 2. In all 98 stanzas or 392 lines.

Modern Poetry:

1. Vishwa Garbhada Golu from Srimukha.
2. Urmila from Srimukha, by Kayyar Kinhanna Rai, Kannada Pandit, Navajeevana High School, Perdala, South Kanara.

(in all 52 plus 98 or 150 lines).

Detailed Prose:

Srimantha Nana Saheba Peshwe by N. V. Kuradi (Saraswathi Mandiram, Dharwar).

Drama:

Swapnavasavadatta by M. D. Alasingarachar, 40, South Tank Square, Triplicane P. O., Madras.

Non-detailed Study:

1. Charles Darwin by N. S. Veerappa (Usha Press, Nilagiri Road, Mysore).
2. Papa Punya by Subrayanuja (Baliga & Sons, Car Street, Mangalore).

PART III.

Lower Standard.

The same as for Part II for 1950 with the following changes.—Omit under '*Old Poetry*' the two selections from Jaimini Bharata and Yasodhara Charitre and substitute 3rd Sandhi in Sthri Parva of Thimmanna Kavi's *Mahabharata*—74 stanzas or 444 lines.

Higher Standard.

For Paper I:

1. Sabara Sankara Vilasa (first three asvasas).
2. Adbhuta Ramayana (Lakshminaranappa) whole.

For Paper II:

1. Vikramorvasiya (Ayya Sastri).
2. Ratnavali Natike (Basappa Sastri).

MALAYALAM.

1950.

PART II.

Non-detailed Study:

1. Saraswathi by R. Narayana Panikkar, B.A., L.T., S. R. Book Depot, Trivandrum.
2. Adhunika China by M. Samuel, Puthanchantai, Trivandrum.

Detailed Study:

(a) *Poetry:*

1. Adhyatma Ramayanam—Aranya Kandam—Ezuttaccan—any Press.
2. Parvati Swayamvaram—Pana—by Kuncan Nambiyar—Edition by Kanhirampara Ramunni Nayar—(c/o P. Balakrishna Menon, B.A., B.L., Advocate, Ottapalam, S. Malabar).
3. Virasrnkhala by Vallathole — Vallathole Granthalayam Cheruthuruthi, Cochin State.
4. Ratna Chashakam by Kuttamathu Kunhi Krishna Kurup (K.K. Narayana Kurup, Editor, Kuttamathu Sahityasamuccayam, Ceruvattur, North Malabar.)

(b) *Drama:*

1. Sikkandar—E. M. Kovur—Reddiar's Press, Trivandrum.
2. Urubhangam—Vallathole—Vallathole Granthalayam, Cheruthuruthi, Cochin State.

(c) *Prose:*

1. Randu Sahityanayakanmar—A. D. Harisarma—St. Albert's College, Ernakulam.
2. Asthamanam—K. P. Kesava Menon, *Barrister-at-law* (Mathrubhumi Press, Calicut).
3. Sahitya Sahyam—A. R. Raja Raja Varma—up to Kritipranayanam, B. V. Book Depot, Trivandrum.

PART III.

Lower Standard.

1. Saraswathi by R. Narayana Panikkar, B.A., L.T., S. R. Book Depot, Trivandrum.
2. Adhunika China by M. Samuel, Puthanchantai, Trivandrum.

Higher Standard.

(Will be prescribed later, if necessary.)

Text-books for the Examinations of 1951.

ENGLISH.

1951.

Shakespeare: Julius Caesar.

Poetry: Selections as prescribed for 1950.

Prose—Detailed Study:

Macaulay—Essay on Addison.
Raghavan and Ghani—Many Voices—(Asian Book Co., Madras.)

Prose—Non-detailed Study:

Dickens—A Tale of Two Cities. Herbert Strang's Library, (O.U.P.)

K. Muir—Florence Nightingale, (Blackie).

K.P.K. Menon—Stories of Yesterday and To-day, omitting Story No. XI. *Before the Party.* (The National Publishing Co., Madras).

SANSKRIT.

1951.

PART II.

The same as for 1950, with the change that the *Pratimanataka* of Bhasa be substituted for *Nagananda.*

PART III.

Lower and Higher Standards.

The same as for 1950.

MARATHI.

1951.

PARTS II AND III.

The same as for 1950.

HINDI.

1951.

PART II.

Prose and Poetry: The same as for 1950.

Non-detailed:

1. Nav Pallav (D. B. H. P. Sabha, Madras).
2. Ram Carca (D. B. H. P. Sabha, Madras).

PART III.

The same as for 1950.

FRENCH.

1951.

PART II.

1. French Poetry for Schools edited by J. Boielle, Longmans. Nos. 63 to 92 inclusive.
2. Corneille: Polyeucte, O.U. Press, Heath's Edition.
3. Carmen et autres nouvelles by Prosper Merimee, Heath's Edition, O.U. Press.
4. Voyage de Monsieur Perrichon by Lebiche et Martin, edited by Benj. W. Wells, Ph.D., Heath's Edition, O.U. Press.

PART III.

The same as for 1950.

GERMAN.

1951.

PARTS II AND III.

The same as for 1950.

TAMIL.

PART II.

1951.

Poetry:

1. Purananuru—Stanzas 87, 88, 90 to 95, 99, 100, 101, 231, 232 and 235.
2. Kambaramayanam—Chulamanip-padalam, omitting stanzas 1, and 43 to 53.
3. Kalingattupparani—Kalampadiyatu—Verses 1—31, omitting 8 and 12.
4. Mukkudal Pallu—Stanzas 19 to 26, 34 and 35.
5. Irakshanya Yatrikam—Irakshanya Charita Padalam, Stanzas 1, 2, 305 to 311, 314 to 321, and 335 to 343.
6. Tanippadal—Peruntogai—Stanzas 1180, 1181, 1188, 1190 and 1192.

(Items 1–6: The same as for 1950.)

7. Tirukkural—Arattuppal—Chapters 10 to 14.
8. Manimekhalai—Pattiram perra katai—(omitting line 79).
9. Villi Bharatam—Karna Parvam (Patinelam por Carukkam).
10. Tiruvilaiyadal Puranam—Virahu Virra Padalam.
11. Tirukurrala-k-Kuravanchi—(Kuratti Nattu Valam Padal—5, 6, 7 and 9; Tirukudanadar Nilai Visedam—1 to 12).

Prose—Detailed:

1. Tamilar Nencham—M.Varadarajan, Senior Lecturer, University of Madras.
2. Raja Jai Sing—C. S. Muthuswami Aiyar (Palaniappa Bros. Trichinopoly).

Prose—Non-detailed:

1. Manonmaniyam — Kesavaramaswami (Gopalakrishna Kone, Madura).
2. Manaviyin Urimai—Manikkam (Tamil Nilayam, Pudukottah).

PART III.

Lower and Higher Standards.

The same as for 1950.

TELUGU.

1951.

PART II.

Old Poetry:

The same as for 1950.

Modern Poetry:

Minchupalli by Nidadavolu Venkata Rao.

Prose:

The same as for 1950.

Non-Detailed:

Jebu Dongalu by Viswanatha Satyanarayana.

Drama:

Pratignayougandharayanam by P. Purnapragna Charlu.

PART III.

Lower Standard

The same as for Part II deleting "Visruta Charitra" and "Vyasudu Kasini Bayuta".

Higher Standard.

The same as for 1950.

KANNADA.

1951.

PART II.

Old Poetry:

1. Lakshmisana Jaimini Bharata—Sandhis 19, 20, 21.
2. Karnataka Bhartrhari Niti Sataka—Padyas 1—50.

Modern Poetry:

1. Kannada Kumara Sambhava—Sarga 5 by A. Shankaranarayana.
2. Madalasopakhyana, Adhyaya 3 by Srikantha Sastri.

Detailed Prose:

Samastha Bharata Sara by M. Thimmappayya, pages 1-76.

Drama:

Duta Ghatotkacha and Karna Bhara by M. Sankaranarayana Bhat.

Non-detailed Study.

1. Devata Manushya by K. Sankara Bhat.
2. Turayi by C. K. Venkataramiah.

PART III.

Lower Standard.

The same as for 1950.

Higher Standard.

For Paper I.

1. Padya Sara, Part II—Sections 1 to 10—Curator, Government Book Depot, Bangalore.
2. Adbhuta Ramayana (can be had from S. G. Sastri, Kanakamhalli Road, Bangalore).

For Paper II:

1. Vikarmorvasiya by Ayya Sastri.
2. Ratnavali Natike by Basappa Sastri,

MALAYALAM.

1951.

PART II.

Detailed Study:

Poetry:

1. Adhyatma Ramayanam—Aranyakandam—by Ezuttaccan—any Press.
2. Gosha Yatra—Tullal—by Kunchan Nambiar—Edition by Hari Sarma, St. Albert's College, Ernakulam.
3. Sishyanum Makanum by Vallathole, Cheruthuruthi, Cochin State.
4. Ragarangam by Varikkolil Kesavan Unnithan, Mavelikara, Travancore.
5. Suvarnamekhala by V. V. K., P. K. Bros., Calicut.
6. Yavanika by Changampuzha Krishna Pillai, Edapalli, N. Travancore.

Drama:—

Abhisheka Natakam by Vallathole, Cheruthuruthi, Cochin State.

Prose:—

1. Sahityaranjani, compiled by M. Koshi, B.A., L.T., S. R. Book Depot, Trivandrum.
2. Prabandha Chandrika by K. M. George, M.A., Madras Christian College, Tambaram.
3. Sahitya Sahyam—up to Krithipranayanam by A. R. Raja Raja Varma, M.A., B. V. Book Depot, Trivandrum.

Non-detailed Study:—

1. Odayil Ninnu by Kesava Dev, Mangalodayam Co., Trichur.
2. Vyazhavatta Smaranakal by B. Kalyani Amma, Puthiyara, Calicut.

PART III.

Lower Standard.

The same as for 1950.

APPENDIX III.

B.A. DEGREE EXAMINATION

SYLLABUSES AND TEXT-BOOKS

Syllabus for the Examination for Military Science—Certificate 'B'.

[NOTE.—*The subject may be offered by members of the Madras University Officers' Training Corps (1) instead of "Shakespeare" and "Modern Poetry" or as an additional subject under Part I of the B.A. Degree Examination, or (2) as a Subsidiary Subject or an additional Subsidiary Subject for the B. Sc. Degree Examination.*]

GENERAL.

The object of Certificate 'B' is to set a standard of Military Training to be reached by U.O.T.C. cadets and to test a cadet's powers of leader ship and his ability to command.

The Examination will be taken in two parts.

Part I will test a cadet's knowledge of weapon training and of anti-gas and P.A.D. duties.

Part II will test both the application of this knowledge in the field and the cadet's powers of leadership and his ability to command.

PART I.

WEAPON TRAINING.

Examining officers will test both the candidate's knowledge and his ability to instruct.

Candidates will be asked to instruct a squad in any two of the following lessons :—

Small Arms Training Pamphlet No. 3 (Rifle) Lessons 2 to 6.
,, ,, ,, ,, 4 (L.M.G.) ,, 1 to 10, 13 to 23 (V. B. or Bren.).
,, ,, ,, ,, 5 (A.T.K. Rifle), Lessons 1 to 3.
,, ,, ,, ,, 12 (Bayonet), Lessons 1 to 3.

Candidates will also be asked questions on :—

S. A. T. Pamphlet No. 3 (Rifle), Lessons 7, 8, 9, 13 to 18.
,, ,, ,, 6 (Anti-Aircraft).
,, ,, ,, 8 (2 ,, Mortar—General notes only), and will be tested in two of the following T.O.E.Ts. :—

L. M. G. Nos. 1 to 8.

Anti-Tank Rifle Nos. 1 and 2.

DEFENCE AGAINST GAS AND AIR RAIDS.

Cadets will be required to instruct in :—

(a) Characteristics and effects of war gases.

(b) First aid for and protection against these gases. Cadets will be asked questions on passive air defence and they will be expected to have a good general knowledge of the whole subject.

The subject-matter for the above is contained in "Protection against gas and air raids" Pamphlets Nos. 1 and 3.

MARKING.

100 marks will be awarded for Part 1 of the Examination and will be allotted as follows :—

Instructional ability	50
Knowledge of Weapons	20
T. O. E. Ts.	10
Gas	10
P. A. D.	10

In order to pass, a cadet must obtain at least 50 per cent of the total marks and not less than 40 per cent in any one subject.

PART II.

A cadet will be tested in his knowledge of the duties of section commander and in his powers of leadership and command.

The test will be carried out by means of a T.E. W.T., or, if suitable ground is not available, by means of sand table exercise, in which the candidate will act as a section leader.

Candidates should be prepared to answer questions on :—

Reconnaissance and protection.

Action against tanks.

Defence against air attack.

Protection against gas.

The duties of a section leader in attack and defence.

Field defence works.

They will also be questioned on their knowledge of the implications of leadership and command.

References :

Infantry Section Leading, 1942, Chapters I, II, III, IV, X to XIII, Appendices D and F.

Small Arms Training, Vol. I, Pamphlet No. 6.

Hostile and Friendly Aircraft, 1942.

Field Engineering, Part V, Protective Works, Parts I to VI.

Handbook of Military Hygiene. 1941. Chapters I and II.

The Handling of Men.

The Officer and Fighting Efficiency.

MARKING.

Marks will be allotted as follows :—

(a) For Leadership and Command 60

(b) For knowledge of the duties of a section Commander 40

In order to pass, a candidate must obtain at least 60 per cent of the marks in each of (a) and (b).

All candidates will also be required to complete an obstacle course in full marching order to the satisfaction of the President of the Examining Board. The use of unit obstacle courses both for the purpose of training and for that of the examination test, will be arranged by the H.Q. of the District in which the U.T.C. H.Q. is located.

Mathematics.

Groups (i-a), (i-b) and (ii-a—Main).

(1) ALGEBRA AND TRIGONOMETRY.

Algebra.—Fuller treatment of the Intermediate Course. Permutations and Combinations. Inequalities, limits, elementary theorems in convergence and divergence of series. The binomial theorem for a rational index. Exponential and logarithmic series. Partial fractions. Elementary methods for the summation of series. The elementary properties of continued fractions. Indeterminate equations of the first degree. Elementary properties of determinants. Typical graphs: $y=ax^n$, $y=a/x^n$, $y=ax+b+c/x$, $y=e^x$, $y=\log x$ Graphical solution of cubic and biquadratic equations. General properties of the equation of the nth degree and its roots and co-efficients. *Simple* transformations of equations. Reciprocal equations. Approximate solution of numerical equations.

Trigonometry.—Fuller treatment of the Intermediate Course. Quadrilaterals inscribed in and circumscribed about circles. Regular polygons. Limits of $\sin x/x$ and $\tan x/x$ as x tends to zero. Complex numbers, and their graphical representation. De Moivre's theorem and its immediate applications. Summation of elementary trigonometrical series. Hyperbolic Functions.

(2) CALCULUS.

Calculus.—Standard forms and fundamental processes of differentiation and integration. Successive differentiation, Leibniz Theorem.

Simple applications of the derivative to geometry, algebra, mechanics and physics. Maxima and minima values of a function of one variable. Theorem of mean value (graphical proof). Partial differentiation. Approximations and small errors. Curvature; Cartesian formula for the radius of curvature. Integration by substitution. Integration by parts. Integration regarded as summation, with simple applications to lengths of arcs, areas, volumes and surfaces and to mechanics. Solution of linear equations of the following types.—

(1) $\frac{dy}{dx}+Py=Q$, P and Q being functions of x.

(2) $a\frac{d^2y}{dx^2}+b\frac{dy}{dx}+c=c^{mx}$ or $\text{Cos}\,mx$ or $\text{Sin}\,mx$, a, b and c being constants.

(3) GEOMETRY.

Pure Geometry.—As in the Intermediate Course, and, in addition, Loci, maxima and minima, harmonic ranges and pencils. Complete quadrangle and quadrilateral, coaxal circles. Inversion.

Geometry of the line, plane, sphere, the right cylinder and the right cone.

The fundamental geometrical properties of the conic sections.

Analytical Geometry.—The Cartesian equations of the straight line and the circle referred to rectangular axes, the parabola, ellipse, and hyperbola referred to their principal axes, and the rectangular hyperbola referred to its asymptotes. The general equation of the second degree. The polar equations of the straight line, circle and the conic. Simple problems on the above.

Geometrical Conics.

Such leading properties of Conic Sections, as are specially suitable for treatment by elementary geometry.

Detailed Syllabus.

Focus, directrix, definition of the conic; shape, axes of symmetry, centre, foci. The ellipse as orthogonal projection of a circle.

Geometrical treatment of the following propositions and their immediate applications.

1. If a chord PQ of a conic, whose focus is S, meets the corresponding directrix in R, SR is a bisector of PSQ.

2. The tangents from any point to a conic subtend equal or supplementary angles at a focus.

3. The semi-latus-rectum is a harmonic mean between the segments of a focal chord.

4. The locus of midpoints of parallel chords of a conic is a diameter.

5. The sub-tangent of a parabola is bisected at the vertex and the sub-normal is constant.

6. The foot of the perpendicular from the focus on any tangent of a parabola lies on the tangent at the vertex.

7. The focal chord of a parabola parallel to the tangent at P is equal to 4 SP.

8. $PV^2 = 4\,SK.\,KV$, where PV is an ordinate to the diameter of the parabola through K.

9. The sum or difference of the focal distances of any point on a central conic is constant.

10. The tangent and normal to a central conic at P are bisectors of SPS.

11. The feet of the perpendiculars from the foci on any tangent lie on the auxiliary circle, and the rectangle under these perpendiculars is constant.

12. The sum of the squares of conjugate diameters of an ellipse is constant.

13. The locus of meets of perpendicular tangents of a conic is a circle, which reduces to a straight line when the conic is a parabola.

14. Every plane section of a right circular cone or cylinder is a conic.

(4) Dynamics.

Dynamics.—Resolution and composition of displacements, velocities, and accelerations. Curves of speed and velocity diagrams. Motion of a particle in one plane under constant accelerations. Simple harmonic motion; composition of simple harmonic motions. Angular velocity and angular acceleration; moment of velocity.

Absolute units of force. Resolution and composition of forces. Angular momentum: moments of inertia in simple cases; the pendulum; determination of g. Work, energy, conservation of energy; energy diagrams. Impact; the ballistic pendulum. Simple cases of the dynamics of strings. Dimensions of dynamical units. Conditions of equilibrium of a body acted on by forces in one plane. Moments, couples. Centre of mass. The theory of simple machines. Laws of friction. Graphical methods with simple applications.

Wherever possible, methods with the aid of the Calculus may be adopted.

Group (i-a) only.

ASTRONOMY.

The apparent motion of the heavens. Circumpolar stars. The principal constellations and the most conspicuous stars.

The Celestial Sphere.—Points and lines on it: Horizon, zenith, poles, meridian, etc.: the equinoctical points, etc.

Celestial co-ordinates; right ascension, declination, etc., latitude and longitude.

The transit circle, the equatorial, the clock, the transit theodolite. The sextant and the chronometer.

Phenomena depending on change of latitude and longitude of the observer. Maugnitude of the earth.

The apparent annual motion of the sun. The constellations of the zodiac. The ecliptic and its obliquity. The equinoxes and the solstices, The earth's motion round the sun. The seasons.

Sidereal time, apparent solar time, mean solar time, equation of time. Standard time (India). Civil and astronomical reckoning. Conversion of time.

Explanation of astronomical refraction and parallax, Twilight.

Determination by observation of clock error and rate, of right ascension and declination of heavenly body, and of the latitude and longitude of a station.

The solar system, and the motion of the planets, Kepler's laws. Comets and meteors.

The motion of the moon and her phases. The plane of her orbit. The nodes and their motion. The moon's sidereal and synodic periods. Her diameter and distance.

Distances and magnitudes of the sun, moon and planets.

Causes of the eclipses of the sun and the moon. Ecliptic limits. Number of eclipses in a year. The Calendar. The use of the Nautical Almanac.

HYDROSTATICS, PROPERTIES OF MATTER AND HEAT.

Hydrostatics.—Thrust of fluid on plane and curved surfaces. Centre of pressure in simple cases. Floating bodies and conditions of stability. Properties of gases; determination of heights by barometer. Pumps, pressure gauges; and hydrostatic machines. Capillary phenomena and their explanation by surface tension; general theory of surface tension.

Properties of matter.—Elasticity. Hooke's Law. Compressibility of gases (at high and low pressure) and liquids. Compressibility and rigidity of solids; the elastic limits. Strains due to simple longitudinal pull; Young's modulus and its expression in terms of k and n.

Bending in one plane of bars of simple cross sectional area; flexural rigidity: application to girders. Simple twisting of wires of circular cross sectional area by couple in plane at right angles to length; torsional rigidity; applications to torsion balance and shafts.

Diffusion of liquids and gases; analogy with conduction of heat. Osmosis, viscosity. Pressure of a gas and its explanation on the kinetic theory; Avogadro's hypothesis; Van der Waal's equation.

Heat.—The methods of calorimetry and thermometry. Vapour pressure, critical temperature and pressure. Conduction and diffusion of heat and the determination of constantss. Radiation and absorption; laws of cooling. Theory of exchanges; methods of measuring radiation. Laws of thermodynamics; Simple applications.

Group (i-b).

Optional Subjects.

1. ASTRONOMY.

The stars, the rotation of the earth, the celestial sphere. The principal instruments: determination of latitude and longitude. Distance and magnitude of the heavenly bodies. Refraction.

Simple problems connected with the diurnal motion. Apparent annual motion of the Sun, aberration; the equation of time. The nautical almanac. The motion of the moon; eclipses.

The stellar system.

Detailed Syllabus.

The most conspicuous stars. The principal constellations. The signs of the Zodiac. Double and multiple stars. Variable stars. Nebulae, comets and meteors.

The apparent motion of the heavens and its explanation by the rotation of the earth. Arguments and proofs for the earth's rotation. Foucault's gyroscope and pendulum experiments.

The celestial sphere and the different systems of co-ordinates.

The telescope. Reflectors and refractors. Advantages and disadvantages of the two. The transit theodolite. The transit instrument, meridian circle, the clock. The chronometer. The chronograph. The equatorial. Sextant. Zenith telescope.

Determination by observation of clock error and rate; the right ascension and declination of a heavenly body; latitude and longitude of a place on land or sea. Sumners's method.

Form and size of the earth. Phenomena depending on a change of the observer's place on the earth. Parallax (diurnal and annual) Distance. and magnitude of the sun, moon and the planets and stars.

The atmosphere and the effect on astronomical observations. The tangent formula for refraction. Cassini's formula. Twilight.

Simple problems connected with the diurnal motion. (Right angled spherical triangle; sine and cosine formulae). The apparent annual motion of the sun and its consequences. The ecliptic and its obliquity. The position of the ecliptic at any given instant. The equinoxes and solstices. Determination of the first point of Aries and the obliquity of the ecliptic. Effects of precession and nutation.

The earth's motion round the sun. Aberration and its effects. Kepler's Laws and Newton's deductions therefrom. True anomaly, mean anomaly and lengths of the seasons. Sidereal Time. Apparent solar time. Mean solar time. Equation of time. The calender. The use of the Nautical Almanac. Standard Time (India).

The motion of the moon and her phases. The nodes and their motion. The moon's sidereal and synodic periods. Eclipses and their causes. Ecliptic limits. Number of eclipses in a year. The Saros.

The solar system and the direct and retrograde motions of planets (coplanar circular orbits). The stationary positions, durations of direct and retrograde motions. Phases of planets.

A general descriptive idea of the stellar system.

Books recommended for Study.

1. Barlow and Bryan : Astronomy.
2. Ball : The Story of the Heavens.
3. Moulton : Introduction to Astronomy.
4. Russell, Dugan and Stewart : Astronomy, Volume I.
5. Spencer Jones : General Astronomy, Chapters XII to XIV, outlines only.
6. Parker : Astronomy.
7. Astronomy by Dr. H. Subrahmanya Ayyar.

Books for Reference.

1. Ball : Spherical Astronomy.
2. Russell, Dugan and Stewart : Astronomy, Volume II.
3. Huchinson : Splendour of the Heavens, Volume II.
4. Godfrey : Astronomy.

2. Elements of Statistics.

The course is intended to cover the elements of statistical method, and to give an introduction to the methods of computation.

(a) *Elements of Statistical Method.*

Collection of statistics, tabulation, computation, frequency distribution, correlation tables.

(b) *Applications.*

A candidate will be expected to show some knowledge of the application of statistical methods to the following: index numbers, mortality table.

(c) *Practical Work.*

A candidate shall have undergone a course of practical instruction which should extend to about twenty-five hours.

This should cover :—

Computation and plotting, including use of tables and of semi-logarithmic paper, tabulation, use of the histogram, sketching of frequency curve from histogram ; fitting of normal curve ; determination of deviation, medium. Simple case of correlation co-efficient.
Exercises on subjects in (b).

Detailed Syllabus.

(a) *Elements of Statistical Method.*

Collection of Statistics.	Objects in view. Census as an example. Variables. Scheme. Principles to be observed Size of samples required.
Tabulation.	Classes. Choice of class interval.
Computation	Semi-logarithmic paper, Multiplication Tables, Barlow's Tables. Slide rule, Pearson's Tables.
Frequency Distribution,	Histogram. Frequency polygon.
(One variable).	Chance distribution, binomial, normal curve, frequency curve. Average; mean, median, mode. Skewness. Dispersion, mean deviation, standard deviation. Ogive, quartiles, probable error, Sampling.
Correlation Table, (Two variables)	Co-efficient of correlation, regression lines, correlation ratio.

The following books are recommended for study :—

(1) A first course in statistics by C. Jones, (Part I). (Bell and Sons).

(2) A first course in statistical method by G. I. Gavett, (McGraw-Hill Book Company, London).

3. ECONOMICS.

Detailed Syllabus.

Introductory.—Nature and Scope of Economics—Place of Economics among Social Sciences. Principal Economic Concepts. Economic Laws and Methods of Economic Science.

Consumption.—Wants of Man—Utility—Marginal Utility—Bernoullian Hypothesis, Law of Demand, Demand Curves, Elasticity of Demand—Consumer's Surplus.

Production.—Agents of Production—Land—Labour—Capital—Laws of Production—Increasing, Decreasing and Constant Returns, Marginal Cost—Law of Decreasing and Increasing Return as applied to Land and Industry. Effect of Tax or Bounty on Production.

Value and Exchange.—Evolution of the market—Value—Theories of Value—Analysis of Supply and Demand—Curves of Demand and Supply—Equilibrium Position—Oscillation about Equilibrium—Price—Value during Long and Short Periods—Prices under Free Competition—Theory of Monopoly Prices.

Mechanism of Exchange.—Money—Evolution and Functions of Money. The Quantity Theory of Money. Systems of Money—Gold Standard and its Variants—History of Indian Currency—Credit, its meaning and forms—Credit and Prices—Paper Money—Convertibility and Inconvertibility—Purchasing Power.

Distribution.—General Theory of Distribution—Law of Rent, Interest—Profits and Wages and the Causes of their Variation—The National Income and its Distribution—Problems of Distribution.

Public Finance.—The Economic Functions of the State—Public Expenditure and Sources of Public Revenue. General Principles of Taxation—Direct and Indirect Taxes, Public Debts.

International Trade.—The Basis of international Exchange—Free Trade and Protection—Tariffs and Bounties—Balance of Trade—Foreign Exchanges—The Rupee Exchange.

Index Numbers.—Their Uses and Methods of Formation.

N. B.—Candidates will be expected to use mathematical and graphical methods in the development of the subject.

4. PURE GEOMETRY.

Properties of triangles. Coaxal systems of circles. Inversions. Conical and orthogonal projections. Cross ratios. Projective ranges and Pencils. Involution. Non-focal properties of conics. The cross-ratio properties of conics. Reciprocation Duality. Circular points.

Detailed Syllabus.

Properties of triangles (isogonal conjugates, Lemoine points and the two Lemoine circles). The coaxal system of circles ; limit points. The theory of inversion.

General properties relating to conical and orthogonal projection. Imaginary elements and the principle of continuity. Desargues' theorem of projective triangles. Cross ratios. Projective ranges and pencils are equicross and conversely. Two projective ranges on the same straight line have two self-corresponding points. Harmonic section ; harmonic property of the pole and polar of a circle ; of the complete quadrilateral and the complete quadrangle. Pappus' theorem.

The involution range and the involution pencil. The double elements are separated harmonically by every pair of corresponding elements. If AA′, BB′ CC′, are in involution, the ranges ABCA′, A′B′C′A are equicross and conversely. Two involution ranges on the same line have one and only one common corresponding pair. The definition of the circular points by means of the orthogonal involution pencil.

The study of the conic as projection of the circle. Non-focal properties common to all conics. Properties of the parabola, ellipse, hyperbola, rectangular hyperbola.

Cross ratio properties of conics. Pascal's and Brianchon's Theorems. Projective and involution ranges on a conic.

Reciprocation with respect to a conic, and with respect to a circle. Duality.

Every circle passes through the circular points, and every conic through the circular points is a circle. Concentric circles have double contact at the circular points. The cross ratio $O(\omega\ \omega', AB)$ depends only on the angle AOB. The definition of the foci of a conic by means of the circular points.

5. ANALYSIS.

i. Differential and Integral Calculus.

Limit of a function. Differentiation. Mean value theorem and Taylor's series. Geometrical applications.

Integration as an inverse process. Reduction formulae.

Integral as the limit of a sum. Simpson's rule.

Application of integration to mensuration.

ii. Infinite Series and Products.

Infinite sequences. Sequence definition of e.

Tests for series. Exponential theorem.

Infinite products ; $\sin x$ and $\cos x$ as infinite products.

The complex variable, the elementary transcendental functions of the complex variable.

iii. Differential Equations.

Formation of differential equations.

Solution of the simplest types.

Detailed Syllabus.

(i) Differential and Integral Calculus.

Monotonic functions. Continuous and discontinuous functions with graphical illustrations. Limit of a function. Standard limit theorems required for differentiation.

Rules of differentiation. Successive differentiation. Leibniz's Theorem.

Rolle's Theorem. Mean value theorem with Lagrange's and Cauchy's form of remainder. Applications to maxima and minima, to intermediate forms. Infinite Taylor expansions of elementary functions like exp. x, sin x, log $(1+x)$, $\text{Sin}^{-1} x$, $\tan^{-1} x$ with proofs.

Application of the derivative to plane curves; tangent; normal, etc., in Cartesian and polar co-ordinates. (p, r) equations, pedals.

Curvature—formulae in rectangular and polar co-ordinates. Intrinsic equations, evolutes, envelopes.

Properties of the cycloid, cardioid and catenary.

Integration as an inverse process. Standard forms. Reduction formulae.

Definite integral as a limit of a sum. Proof of the existence of limit when function is monotonic. Reduction formulae for definite integrals. Approximate integration. Simpson's rule.

Application of integrals to mensuration. Areas and lengths of plane curves in Cartesian and polar co-ordinates. Volumes and areas of surfaces of revolution. Centre of inertia, moments of inertia, of plane laminas and solids of revolution.

(ii) Infinite Series and Products.

Infinite sequences and the classification of their modes of behaviour. Monotonic sequences. Bounded monotonic sequences tend to a limit (only intuitive proof). Standard limits including limits of $\left(1+\frac{1}{n}\right)^{n}, \left(1-\frac{1}{n}\right)^{-n}$.

Dirichlet's and Abel's tests. Absolutely convergent double series. Theorems on the multiplication of absolutely convergent series. Application to the proof of the exponential theorem.

Convergence of infinite products $\pi\left(1+a_n\right)$, $\pi\left(1-a_n\right)$, when $0<a_n<1$

Infinite products for sin x, cos x.

(iii) Differential Equations.

Formation of Differential equations; variables separable.

Homogeneous Equations $M+N\frac{dy}{dx}=0$.

Linear Equations $\frac{dy}{dx}+Py=Q$.

Linear Equation with constant co-efficients where the right hand side is a sum of functions of the type $xemx$, Cos mx Sin mx, xm.

Simple geometrical and dynamical applications of the above equations.

Orthogonal trajectories (Cartesian and polar co-ordinates).

Group (i-c)—Statistics.

Syllabus.

Syllabuses for Statistics including Elements of Theory of Probability and Elements of Finite Differences :—

Probability.—Definition and fundamental theorems on addition and multiplication of probability with examples. The law of large numbers. The binomial distribution and its approximation to Normal distribution and Poisson's Series. Inverse probability and Baye's theorem.

Finite Differences.—Symbolic operators, nth differences of a tabulated function—Gregory Newton formula on intepolation—Lagrange's formula—Central differences and Eucrates formula. Quadrature—Gregory's formula and Lubbock's formula.

Statistical Methods.—

1. Collection of data—Census method and sample method.
2. Classification and tabulation of data.
3. Diagrammatic representation charts, bar diagrams (simple and sub-divided) Spot diagram, graphs of time series (simple and logarithmic)—frequency distribution—frequency polygon, Histogram, frequency curve and Ogive.
4. *Measures of Central iendency.*—

   Mid point, Arithmetic Mean, median, mode, geometric mean and harmonic mean.

Measures of Dispersion.—Range, standard deviation, mean deviation, quartile deviation, co-efficient of variation, skewness.

Two Variables—Tests of independence and associated of variables—co-efficient of contingency—co-efficient of correlation (by the product moment and Rank methods) regression lines, partial and

multiple correlation for three variables. Non-linear regression and correlation ratio.

Curve fitting.—Method of least squares for fitting polynomials—Derivation and solution of Normal equations. Normal curve—obtaining the constants of the curve. Relation between the standard deviation and quartile deviation—use of tables of normal cure. λ^2 test for testing goodness of fit.

Sampling.—Probable errors of, the proportion, Arithmetic Mean, Standard deviation and co-efficient of correlation in large samples. Modifications or small samples. Testing the significance of the difference between the values of the above statistics in two different samples.

Practical classes on the application of these methods to be recorded in a separate note-book.

Text-books.—

C. Jones: First course in Statistics.

Gavett: A first course in Statistical method.

Brunt: Combination of Observations.

Smith: Algebra (for probability.)

Reference.—

Whittaker and Robinson: Calculus of Observations.

Yule and Kendall: Introduction to the Theory of Statistics.

(ii—b) Physics—Main.

The course in cludes a more extended study of the matter included in the Intermediate course and in addition the following:—

Dynamics.—Resolution and composition of displacements, velocities, and accelerations. Curves of speed and velocity diagrams. Motion of a particle in one plane under constant acceleration. Simple harmonic motion; composition of simple harmonic motions. Angular velocity and angular acceleration; moment of velocity.

Statics.—Absolute units of force. Resolution and composition of forces. Angular momentum; moments of inertia in simple cases. The pendulum; determination of *g*. Work, energy, conservation of energy, energy diagrams. Impact. Dimensions of dynamical units. Conditions of equilibrium of a body acted on by forces in one plane. Moments, couples, centre of mass. The theory of simple machines. Laws of friction.

Hydrostatics.—Thrust of fluid on plane surfaces. Centre of pressure in simple cases. Floating bodies and conditions of stability. Properties of gases. Pumps, pressure gauges, and hydrostatic machines. Capillary phenomena and their explanation by surface tension.

Detailed Syllabus in Dynamics, Statics and Hydrostatics.

THEOREMS.

If a moving point passes simultaneously velocities which are represented in magnitude and direction by the two sides of a parallelogram drawn from a point, they are equivalent to a velocity which is represented in magnitude and direction by the diagonal of the parallelogram passing through the point.

The relative velocity of one point B with respect to a second point A is obtained by compounding with the velocity of B a velocity which is equal and opposite to that of A.

To determine graphically, by means of a velocity-time curve the distance described in a given time by a moving point.

A point moves in a straight line starting with velocity u and moving with constant acceleration a in its direction of motion; if v be the velocity at the end of time t, and s be its distance at that instant from its starting point, then

(1) $v=u+at$

(2) $s=ut+\frac{1}{2}at^2$

(3) $v^2=u^2+2\,as$.

To derive the equation $F=ma$ from the second law of motion.

To show that the change of momentum of a particle in a given time is equal to the product of the force which acts on the particle and the time during which it acts.

To show that the kinetic energy of a particle is equal to the product of its mass and one half of the square of its velocity,

To show that the change of kinetic energy per unit space is equal to the acting force.

To find the work done in stretching a spring by means of an energy diagram.

A smooth sphere or particle whose co-efficient of restitution is 'e' impinges obliquely on a fixed plane; find the change in its motion.

If a particle describes a circle of radius r with uniform speed v, to show that the acceleration is $\frac{v^2}{r}$ directed towards the centre of the circle.

A particle is projected into the air with a given velocity and direction of projection; show that its path is a parabola and find the range on the horizontal plane through the point of projection, and the time of flight.

To find the velocity, acceleration and the periodic time of a point executing simple harmonic motion.

To find the resultant of two S.H.M's of the same period in the same straight line.

To find the resultant of two S. H. M's of the same period and at right angles.

To find the period of oscillation of a compound pendulum when the amplitude is small.

To show that the centres of suspension and oscillation are reversible.

To show that if a moving point describe a circle, its angular velocity about the centre of the circle is equal to its speed divided by the radius of the circle.

The moment of inertia of a body through an axis is equal to the sum of the moment of inertia of the body about a parallel axis through the centre of gravity and the product of the mass of the body $\times$ the square of the distances between the axes.

The moment of inertia of a plane lamina about a perpendicular to its plane and meeting it in a point O is the sum of the moments of inertia of the lamina about any two axes at right angles in the lamina and intersecting one another at O.

To find the moment of inertia of a thin uniform rod about an axis through the centre and perpendicular to the length.

To find the moment of inertia of a circular lamina about an axis passing through the centre perpendicular to its plane.

To find expressions for the angular acceleration, angular momentum and the kinetic energy of a body rotating about an axis.

To find the work done by a torque (or couple) for a given angle of twist.

If a particle be acted on by two forces represented in magnitude and direction by the two sides of a parallelogram drawn from a point, they are equivalent to a force represented in magnitude and direction by the diagonal of the parallelogram passing through the point.

If three forces acting at a point be represented in magnitude and direction by the sides of a triangle taken in order, they will be in equilibrium.

If three forces acting at a point be in equilibrium, they can be represented in magnitude and direction by the sides of any triangle, which is drawn so as to have its sides respectively parallel to the directions of the forces.

If three forces acting on a particle keep it in equilibrium each is proportional to the sine of the angle between the other two.

If any number of forces acting on a particle be represented in magnitude and direction by the sides of a polygon taken in order, the forces shall be in equilibrium.

To find the resultant of any number of forces in one plane acting upon a particle.

To find the conditions of equilibrium of any number of forces acting upon a particle.

To find the resultant of two parallel forces acting upon a body.

The algebraic sum of the moments of two or more forces about any point in their plane is equal to the moment of their resultant about the same point.

If three forces acting in one plane upon a rigid body keep it in equilibrium they must either meet in a point or be parallel.

Any system of forces acting in one plane upon a rigid body can be reduced to either a single force or a single couple or must be in equilibrium.

A system of forces in one plane acting upon a rigid body is in equilibrium if the sum of their components parallel to each of two lines in their plane be zero, and if the algebraic sum of their moments about any point be zero also.

Given the centre of mass of the two portions of a body to find the centre of mass of the whole body.

Given the centre of mass of the whole of a body and of a portion of the body, to find the centre of mass of the remainder.

To find the centre of gravity of a uniform rod, rectangular lamina, triangular lamina and tetrahedron.

To find the centre of gravity of a system of particles in the same plane at known distances from a fixed point.

To show that in a machine the mechanical advantage is equal to the product of the efficiency and the velocity ratio.

To find the mechanical advantage in the case of the following machines neglecting friction and weight of parts :—

1. The lever.
2. Pulleys—three systems.
3. The wheel and axle.
4. The inclined plane.
5. The screw.

To show that the co-efficient of friction is equal to the tangent of the angle of friction.

The pressure at any point of a fluid at rest is the same in all directions.

To find resultant thrust of a fluid on a plane surface.

To find th centre of pressure when immersed in a liquid :—

1. of a rectangular lamina with one side in the surface.
2. of a triangle with one side in the surface.
3. of a triangle with a vertex in the surface and the opposite side horizontal.

To find the conditions of equilibrium of a body freely floating in a liquid.

If a body float freely and be slightly displaced so that it displaces the same quantity of liquid as before, then the body is in stable or unstable equilibrium according as the meta-centre is above or below the centre of gravity of the body.

To show that the product of the pressure and volume of any given mass of gas is proportional to its absolute temperature.

To show that surface tension is the same in all directions and at all points.

To show that the surface energy per unit area is numerically equal to the surface tension.

To find the relation between the radius of (1) spherical drop, (2) a spherical bubble of a liquid, and the surface tension and pressure.

To find an expression for the rise of a liquid in capillary tube.

PROPERTIES OF MATTER.

Hooke's law, stress, strain, elastic limit. Strains due to simple longitudinal pull. Young's modulus and its expression in terms of 'k' and 'n'. Experimental study of bending in one plane, of bars of simple cross sectional area; relation between bending moment, and the curvatnre of the neutral axis. I form girders. Simple twisting of wires of circular cross section by a couple at right angles to its length; torsional rigidity; torsion balance. Compressibility of gases at high and low pressures; Amagat's and Andrews' experiments, deviations from Boyle's law. Pressure of a gas and its explanation on the kinetic theory. Avogadro's hypothesis; molecular speed and absolute temperature of a gas. Diffusion of liquids; analogy to conduction of heat. Osmosis; the laws of osmotic pressure. Experimental determination of viscosity by flow of a liquid through a capillary tube.

HEAT.

Expansion of isotropic solids; expansion of liquids; expansion of gases. Liquid-in-glass thermometers; gas thermometers—constant pressure and constant volume. Specific heat of solids—method of mixture; radiation correction. Bunsen's ice calorimeter. Specific heat of liquids—method of mixture—method of cooling. Specific heats of gases—Jolly's method—Regnault's method. Latent heat of fusion and of vaporisation; total heat of steam. Vapour pressure of water at high and low temperatures. Triple point.

Continuity of state :—

Compressibility of gases at high and low pressures; Van der Waal's equation; critical constants; methods of liquefying gases.

Adiabatic and isothermal changes :—

Relation between the specific heats of a gas at constant volume and at constant pressure, and the gas constant; equation to the adiabatic

of a perfect gas. Determination of the ratio of the specific heats of a gas—Clement and Desormes' method—velocity of sound method. Thermal conductivity:—determination of thermal conductivity for good conductors—Searle's apparatus; Lees' method for bad conductors.

Radiation and Absorption:—

Theory of exchanges; emissive and absorptive powers; instruments for measuring radiation. Laws of cooling. First law of thermodynamics—Experiments of Joule, Rowland and Callendar. Work done in adiabatic and isothermal expansions. Carnot's engine—indicator diagram—efficiency. Carnot's theorem. Second law of thermodynamics. Thermodynamic scale of temperature.

OPTICS.

(a) GEOMETRICAL OPTICS.

Reflection and Refraction:—

Optical lever; sextant; critical angle—air cell; thin lenses; combination of two thin lenses in contact; liquid lens; refraction through a prism—minimum deviation; spherical aberration.

Dispersion:—

Chromatic aberration; achromatic combination of prisms; achromatic combination of lenses in contact. Dispersive power of a prism. Direct vision and constant deviation spectroscopes.

Optical instruments:—

Photographic camera. Telescope—reflector, refractor. Compound microscope. Eye-pieces—Ramsden's and Huyghens'.

Photometers:—

Bunsen and Lummer-Brodhun.

(b) PHYSICAL OPTICS.

Velocity of light:—

Romer—Fizeau—Foucault.

Wave theory:—

Huyghens' principle; explanation of straight line propagation of light; explanation of reflection and refraction of plane waves at a plane surface.

Interference:—

Young's experiment; Fresnel's biprism—displacement of fringes by a thin transparent plate; colours by reflection at, and transmission through thin films; Newton's rings.

Diffraction :—

Study of simple diffraction phenomena at a straight edge; plane transmission grating; determination of wave length by the grating at normal incidence.

Polarisation and double refraction :—

Polarisation by reflection; Brewster's law. Double refraction through calcite and quartz; Nicol's prism. Measurement of the rotation of the plane of polarisation; polarimeter.

Spectrum analysis :—

Emission and absorption spectra in the visible region; Doppler's principle and applications.

MAGNETISM.

Forces acting on a magnet is a uniform magnetic field. Magnets—determination of axis and moment. Potential and field at any point due to a small magnet. Couple acting on a magnet due to another magnet—A and B positions. Magnetic shell—potential due to a shell. Total normal induction; Gauss' theorem; number of lines of force from a magnetic pole. Magnetic induction; intensity of magnetisation; magnetic susceptibility, permeability, B-H, I-H curves—magnetometer method. Magnetic field due to the earth; magnetic elements—their determination.

ELECTRICITY.

(a) ELECTROSTATICS.

Electrification by friction and by induction. Gold leaf electroscope. Force between charges—effect of medium. Inverses square law. Gauss' theorem. Potential of a charged sphere. Coulomb's law. Mechanical force on charged bodies. Lines of force.

Electric capacity—spherical and parallel plate condensers. Energy of charged conductors and condensers.

(b) CURRENT ELECTRICITY.

Magnetic field due to a circular current; magnetic field due to a long solenoid at a point inside it; equivalent magnetic shell. Tangent galvanometer. Force exerted by a magnetic field on a coil carrying a current—moving coil instruments. Ballistic galvanometers.

Resistance :—

Specific resistance. Kirchhoff's law—Application to wheatstone's net. Resistance thermometers; Callendar and Griffiths' bridge. otentiometer—measurement of E. M. F., internal resistance of a cell, urrent, and resistance.

Electrolysis :—

Conductivity of electrolytes; ionisation. Primary cells; standard cells; accumulators.

Thermo-electricity :—

Seebeck effect—Peltier effect—Thomson effect; experiments to illustrate the effects. Measurement of E.M.F. of a thermocouple.

Phenomena of electromagnetic induction; self and mutual induction; definition of co-efficients of induction. Induction coils—their construction and use. Foucault currents. Lenz's law—illustrations. Earth inductor. Working of the continuous current dynamo and motor, A.C. generator and motor. Transmission of power. Efficiency of Lamps. General principles of telegraphy, and telephony; the microphone and loud speaker.

Elementary study of (a) wireless, (b) X-rays and (c) radio-activity:—

(a) Oscillating circuit; valve detector; valve amplifier.

(b) Discharge of electricity through a rarefied gas; cathode rays; gas X-ray tube; Coolidge tube.

(c) α, β and γ rays.

SOUND.

Equations for a simple harmonic wave. Progressive and stationary waves. Speed of sound in a gas; Laplace's correction. Effect of pressure, temperature, and humidity on the velocity of sound in a gas. Reflection and refraction of sound—effect of wind. Doppler's principle. Interference of sound waves—beats. Speed of transverse waves along a cord—laws of transverse vibrations—Melde's experiment. Kundt's experiment. Vibration of gas columns; organ pipes; manometric flames; nodes and antinodes. Free vibrations, forced vibrations; resonance; resonators. Quality of sound. Measurement of wave-length, velocity and frequency. Electrically maintained forks. Indian musical instruments.

A practical examination will be held to test the candidate's acquaintance with the phenomena and his ability to show them, as well as his ability to make physical measurements. At the practical examination candidates must submit to the Examiner or Examiners their laboratory note-books duly certified by their professors or lecturers as a *bona fide* record of work done by the candidates.

PRACTICAL WORK.

PROPERTIES OF MATTER.

1. The balance; sensibility—true weight of a body—use of the rider.

2. Simple pendulum, with correction for the moment of inetia of the bob.

3. Compound bar pendulum—k^2 and g.
4. Young's Modulus by stretching.
5. Young's Modulus by bending.
6. Rigidity by static torsion.
7. Rigidity by torsional oscillations.
8. Moment of inertia—torsion pendulum.
9. Surface tension by capillary rise.
10. Surface tension by pull on a plate.
11. Viscosity by flow of liquid in a capillary tube.

HEAT.

12. Co-efficient of linear expansion.
13. Co-efficient of expansion of a liquid by pyknometer.
14. Co-efficient of expansion of air at constant volume—melting point of a solid—boiling point of a liquid.
15. Co-efficient of expansion of air at constant pressure.
16. Aqueous tension of water vapour, using constant volume apparatus.
17. Specific heat of a solid—radiation correction.
18. Specific heat of a liquid, using a solid—radiation correction.
19. Latent heat of fusion of ice—radiation correction.
20. Latent heat of steam—radiation correction.
21. Specific heat of a liquid by cooling.
22. Cooling curve—emissivity.
23. Cooling curve—melting point.
24. Thermal conductivity—Searle's apparatus.
25. Mechanical equivalent of heat.

LIGHT.

26. Focal length of concave and convex mirrors.
27. Focal length of convex lens.
28. Focal length of concave lens.
29. Refractive index of a convex lens.
30. Refractive index of a concave lens.
31. Refractive index of a liquid by liquid lens.
32. Magnifying power of telescope and microscope.
33. Refractive index of a liquid by total reflection.
34. The Spectrometer—refractive index of a solid by minimum deviation.
35. The Spectrometer—refractive index of a liquid by hollow prism.
36. The Spectrometer—variation of angle of incidence and angle of deviation ; i—d curve.

37. The Spectrometer—dispersive power of a prism.
38. The Spectrometer—determination of wave length of light by transmission grating at normal incidence.
39. Newton's rings in reflected light—radius of curvature.
40. The Polarimeter—rotation of the plane of polarisation.
41. Measurement of candle power by photometer.

SOUND.

42. Frequency by resonance columns—end correction.
43. Frequency by falling plate method.
44. Kundt's tube.
45. The Sonometer.
46. Melde's experiment.

MAGNETISM.

47. Verification of the inverse square law by Gauss' method.
48. Determination of M. and H.
49. Measurement of dip by the dip circle.

ELECTRICITY.

50. Measurement of resistance by metre bridge.
51. The P.O. box and measurement of resistance—specific resistance.
52. Conductivity of an electrolyte.
53. Absolute measurement of current by tangent galvanometer.
54. Measurement of E.M.F. by potentiometer.
55. Measurement of current by potentiometer—ammeter calibration.
56. Measurement of resistance by potentiometer.
57. Standardisation of potentiometer—calibration of voltmeter.
58. Carey Foster's method of comparing nearly equal resistances.
59. Temperature co-efficient of resistance.
60. Comparison of low resistances by direct deflection.
61. Comparison of high resistances by direct deflection.
62. Water voltameter.
63. Copper voltameter.
64. Joule's law.
65. B. H. P. of a motor.
66. Resistance of a galvanometer—half deflection method.
67. E.M.F. of thermo-couple by potentiometer method.
68. E.M.F. of thermo-couple by direct deflection.
69. Constant of a ballistic galvanometer by Hibbert's Magnetic standard.

70. Comparison of E.M.Fs. and capacities by ballistic galvanometer.
71. Comparison of mutual inductances by ballistic galvanometer.

Text-Books.

Books for Study—

The subject-matter as given in the following books is to be studied, omitting portions not covered by the syllabus :—

Loney: Elements of Dynamics and Statics and Hydrostatics.

Wagstaff: Properties of Matter.

Capstic: Sound.

Edser: Heat.

Edser: Light.

Hadley: Electricity and Magnetism.

A. W. Barton: Heat.

G. R. Noakes: A text-book of Light—Macmillan.

S. G. Starling: The Mechanical Properties of Matter (Macmillan).

Sastry and Achar: Statics (Authors, Cathedral Post, Madras).

V. Sivaramakrishna Ayyar and P. K. Krishna Pillai: A Manual of Practical Physics (Authors, Trivandrum).

P. E. Subramanya Ayyar: Properties of Matter (S. Viswanathan, 2/10, Post Office Street, Madras.)

S. R. Govindarajan and T. Murugaiyan: An Introducory Text-book on Sound.

S. Narayanan: Dynamics. (Author, Loyola College, Madras).

Reference:—

Edser: General Physics.

Catchpool: Sound.

Brooks and Poyser: Electricity and Magnetism.

Bedford: Practical Physics.

Searle: Experimental Elasticity.

Porter: Intermediate Course in Mechanics.

Poynting and Thompson: Heat.

Clay: Treatise on Practical Light.

Watson: Practical Physics.

Nightingale: Sound.

K. S. Venkatesan: Practical Physics.

R. N. Ghosh and R. N. Roy: Text-book of Sound. (Indian Press, Allahabad).

T. N. Seshadri: A Handbook of Mathematical Tables and Physical Constants (S. Viswanathan, 2/10, Post Office Street, Madras).

(ii-c) Chemistry—Main.

General Theoretical Chemistry and Physical Chemistry.—The methods of determining equivalents; atomic and molecular weights; the atomic theory; valency; osmotic pressure; the kinetic theory of gases; the properties of solutions; electrolysis and theory of electrolytic dissociation; the relations of the physical properties of substances to their chemical nature, with special reference to the rotation of the plane of polarization, to refraction and dispersion, crystalline form, atomic and molecular volume, emission and absorption spectra.

The law of mass action; velocity of chemical charge; the relations of chemical energy to heat, and to electrical energy.

The elements (excluding the rare metals) and their compounds studied in detail.

Organic Chemistry treated from an elementary standpoint comprising the following:—

Methods of purification of organic compounds. Qualitative and quantitative analysis. Emprical formulae. Molecular weights of organic acids and bases. Molecular formulae. Isomerism. Constitutional formulae.

Paraffins. Alkyl halides. Alcohols. Alkyl esters of inorganic acids. Nitro-paraffins, Aldehydes and Ketones. Ethers. Fatty acids and their esters, etc. Fats, oils and soaps. Glycerol and its simple derivatives. Amines, Urea. Cyanogen compounds.

Olefines, Acetylenes, and their derivatives. Unsaturated acids Geometrical isomerism. Dibasic acids of the oxalic series and their derivatives. Baeyer's Strain Theory. Acetoacetic ester, Tautomerism. Hydroxy-monobasic and polybasic acids with special reference to glycollic, lactic, malic, tartaric, and citric acids. Asymmetric carbon atom and optical activity. Simple Amino-acids. Sugars with special reference to Glucose, Fructose and Sucrose. Starch, Cellulose.

Benzene and its homologues. Sulphonic, Nitro-, Amino-, and halogen derivatives of aromatic hydrocarbons. Diazonium compounds and their reactions. Simple Azo-eyes, Phenols. Quinones. Benzyl Alcohol, Benzaldehyde and Benzoic acid and their important derivatives. Acetophenone. Salicylic Aldehyde and Acid, Cinnamic Aldehyde and Acid, Anthranilic Acid, Phthalic Acids and their common derivatives. Laws of orientation and substitution in aromatic compounds. Triphenyl-methane dyes with special reference to Malachite Green, Pararosaniline and Rosaniline. Naphthalene and its more important substitution products. Anthracene, Anthraquinone. Alizarin. Colour and chemical sonstitution.

The practical examination in Chemistry will include—

1. Qualitative analysis, including analyses of mixtures of mineral substances.

2. Quantitative analysis, including (*a*) the estimation of alkalis, alkaline carbonates, and acids, by neutralization, (*b*) determinations involving the use of the permanganate, dichromate, iodine and thiosulphate processes, (*c*) the estimation of chlorides and cyanides by titration with silver nitrate, and also with thiocyanate, (*d*) gravimetric determinations of iron, calcium, copper, silver, lead, sulphuric acid, hydrochloric acid, phosphoric acid.

Candidates will be required to be able to standardize the solutions for volumetric analysis.

3. The determination of molecular weights.

4. Preparation of at least six simple organic substances, *e.g.* Chloroform, Ether, Ethylacetate, Acetic Anhydride, Urea, Nitrobenzene Aniline, Phenol, Benzoic Acid (from Toulene), Iodobenzene, Salicylic acid, an Azo-dye, etc.

At the practical examination, candidates must submit to the Examiner or Examiners their laboratory note-books duly certified by their professors or lecturers as a *bona fide* record of work done by the candidates.

Text-Books.

Books for Study :—

Partington: Text-book of Inorganic Chemistry (Macmillan).
Mellor: Modern Inorganic Chemistry (Longmans).
Caven and Lander: Systematic Inorganic Chemistry (Blackie).
Senter: Outlines of Physical Chemistry (Methuen).
Lowry and Sugden: Physical Chemistry (Macmillan).
Caven: Systematic Qualitative Analysis (Blackie).
Caven: Quantitative Chemical Analysis, Parts 1 and 2 (Blackie).
Thorpe: Inorganic Chemical Preparations (Ginn).
Cohen: Practical Organic Chemistry for Advanced Students (Macmillan).
Taylor: Practical Physical Chemistry (O.U.P.)
Perkin and Kipping: Organic Chemistry (Chambers).
Moreau: Fundamental Principles of Organic Chemistry (Bell).
Coward and Perkins: Exercises in Chemical Calculations (Arnold).
Lowry: Text-book of Inorganic Chemistry (Macmillan).
Coleman and Arnall: Preparation and Analysis of Organic Compounds (Churchill).
P. S. Lakshminarayanan: Simple Organic Preparations.
Partington: A Short History of Chemistry (Macmillan).

Reference—

Walker: Introduction to Physical Chemistry (Macmillan).
Russell: Chemistry of Radio-active Substances (Murray).
Read: Text-book of Organic Chemistry (G. Bell & Sons).
Thorpe: History of Chemistry, 2 Volumes (Watts).
Holleman: Text-book of Organic Chemistry (Willey).

Botany, Zoology, Geology and Physiology.

In the parts covered by both syllabuses (of any one subject) the knowledge required for the examination in the subsidiary shall be less detailed than that in the main subject.

(ii-d) Botany—Main.

For the examination of 1949 only.

1. The main points of structure, development, life-history and the taxonomic relation of the following groups in general and the general in particular.

Bacteria.

Cyanophyceae—Ocillaria, Nostoc and Rivularia.

Chlorophyceae—Chlamydamonas, Pandorina, Eudorina, Pleodorina, Volvox, Ulothrix, Oedogonium, Cladophora, Vaucheria, Caulerpa, Spirogyra, Desmids, Nitella and Diatoms.

Phaeophyceae—Ectocarpus, Dictyota and Sargassum.

Rhodophyceae—Batrachospermum, Polysiphonia and Dracillaria.

Phycomycetes—Phytophthora and Mucor.

Ascomycetes—Erysiphe, Peziza and Saccharomyces.

Basidiomycetes—Ustilago, Puccinia and Agaricus.

Litchens—Usnea.

Bryophytes—Riccia, Anthoceros and Funaria.

Pteridophytes—Lastrea, Marsilia, Lycopodium and Selaginella.

Gymnosperms—Pinus and Cycas.

2. The external morphology of flowering plants.

3. The general principles of classification and the distinguishing characteristics of the following families as given in the Flora of British India, including their economic importance:—

Anonaceae	Papilionaceae
Nympheaceae	Caesalpiniaceae
Capparidaceae	Mimosae
Malvaceae	Rosaceae
Sterculiaceae	Combretaceae
Geraniaceae	Umbelliferae

Rutaceae	Rubiaceae
Meliaceae	Compositae
Ampelideae	Apocynaceae
Anacardiaccae	Asclipiadaceae
Convolvulaceae	Urticaceae
Solanaceae	Orchidaceae
Scrophulariaceae	Scitamineae
Acanthaceae	Amaryllideae
Labiatae	Liliaceae
Verbenaceae	Palmae
Amaranthaceae	Araceae
Loranthaceae	Cuperaceae
Euphorbiaceae	Gramineae.

4. Plant Physiology:—The chemical composition of the plant. Materials of plant food and their sources. The nature of the soil and the importance of its constituents and of micro-organisms. Movements of water and gases. Assimilation of carbon and nirtrogen. Transpiration. Translocation of assimilated products. Metabolism. Parasitism and other special modes of nutrition. Respiration. The influence of light, heat and gravity. Growth, movements and irritability in plants. Sexual reproduction and its significance. Vegetative reproduction. Evolution and origin of species. Mendelism. Principles of heredity. Improvement of crops.

5. Histology:—

The structure and modes of division of the cell, and the nature of its contents. The nature and mode of origin of plastids, cell-sap and other cell-contents. The physical and chemical properties of protoplasm and cell-wall. The origin, nature and development of plant tissues. Primary and secondary tissues and their dirtribution in the plant body.

6. Economic Botany:—Study of the following crop plants: Paddy, Cholam, Cotton, Sugarcane and Groundnut.

7. Practical Work:

Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the Groups or Orders mentioned in the syllabus and describe them with sketches sufficient for their identification; to make dissections with the simple microscope of the floral parts of Phanerogams and to make drawings, construct floral diagrams and refer them to their Natural Orders, to describe in technical language plants belonging to any of the Orders or Groups specified in the syllabus.

At the practical examination each candidate must submit his laboratory note-books and a collection of named plants collected and preserved by himself.

Books for Reference.—

Coulter, Barnes and Cowles : Text-book of Botany, 3 Vols.

Ganong : Text-book of Plant Physiology.

Bower : The Living Plant.

Strasburgher : Text-book of Botany.

Ganong : A Text-book of Botany for Colleges, Parts I and II.

Smith, Overton and Gilbert ; Text-book of General Botany.

Botany—Main.

Revised Syllabus.

[NOTE.—*The revised syllabus will take effect from the examination of March* 1950.]

1. The main points of structure, development, life-history and the taxonomic relation of the following groups in general and the genera in particular :—

Bacteria.

CYANOPHYCEAE : *Oscillatoria, Nostoc* and *Rivularia.*

CHLOROPHYCEAE : *Chalmydomonas, Pandorina, Eudorina, Pleodorina, Volvox, Zygnema, Oedogonium, Cladophora, Vaucheria, Caulerpa, Coleochete, Desmids, Nitella, Diatoms.*

PHAEOPHYCEAE : *Ectocarpus, Dictyota* and *Sargassum.*

RHODOPHYCEAE : *Batrachospermum, Polysiphonia* and *Gracillaria.*

PHYCOMYCETES : *Phytophthora* and *Sclerospora.*

ASCOMYCETES : *Erysiphe, Peziza, Saccharomyces* and *Penicillium.*

BASIDIOMYCETES : *Ustilago, Puccinia* and *Agaricus.*

LICHENS : *Usnea.*

BRYOPHYTES : *Riccia, Anthoceros* and *Funaria.*

PTERIDOPHYTES : *Lastrea, Marsilia, Lycopodium and Selaginella.*

GYMNOSPERMS : *Pinus* and *Cycas.*

2. The external morphology of flowering plants.

3. The general principles of classification and the distinguishing characteristics of the following families as given in the Flora of British India including their economic importance :—

Anonaceae	Sterculiaceae.
Nympheaceae.	Geraniaceae.
Capparidaceae.	Meliaceae.
Ampelideae.	Rubiaceae.
Anacardiaceae	Compositae.
Convolvulaceae.	Apocynaceae.
Scrophulariaceae.	Asclepiadaceae.
Acanthaceae.	Loranthaceae.
Verbenaceae.	Urticaceae.
Amaranthaceae.	Orchidaceae.
Cyperaceae.	Scitamineae.
Gramineae.	Amaryllideae.
Rosaceae.	Liliaceae.
Combretaceae.	Palmae.
Umbelliferae.	Araceae.

4. *Plant Physiology*—The chemical composition of the plant. Materials of plant food and their sources. The nature of the soil and the importance of its constituents and of micro-organisms. Movements of water and gases. Assimilation of carbon and nitrogen. Transpiration. Translocation of assimilated products. Metabolism. Parasitism and other special modes of nutrition. Respiration. The influence of light, heat and gravity. Growth, movements and irritability in plants. Sexual reproduction and its significance. Vegetative reproduction. Evolution and origin of species. Mendelism. Principles of heredity. Improvement of crops.

5. *Histology*—The structure and modes of division of the cell, and the nature of its contents. The nature and mode of origin of plastids, cell-sap and other cell-contents. The physical and chemical properties of protoplasm and cell-wall. The origin, nature and development of plant tissues. Primary and secondary tissues and their distribution in the plant body.

6. *Economic Botany*—

Study of the following crop plants:—
Paddy, Cotton, Sugarcane and Groundnut.

7. *Ecology*.—

Structural adaptation to environment :

(1) In relation to underground plant parts.
(2) In relation to aerial plant parts.

8. *General Principles.*—

Mendelism—Principles of heredity.

Evolution and origin of species.

Mutation and Improvement of crops.

9. *Practical Work*.—Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the Groups or Orders mentioned in the syllabus and to describe them with sketches sufficient for their identification; to make dissections with the simple microscope of the floral parts of Phanerogams and to make drawings, construct floral diagrams and refer them to their Natural Orders; to describe in technical language plants belonging to any of the Orders or Groups specified in the syllabus.

At the practical examination each candidate must submit his laboratory note-books and a collection of about 100 named plants collected and preserved by himself.

Books for Reference:

Coulter, Barnes and Cowles: Text-book of Botany, 3 Vols.
Ganong: Text-book of Plant Physiology.
Bower: The Living Plant.
Strasburger: Text-book of Botany.
Ganong: A Text-book of Botany for Colleges, Parts I and II.
Smith, Overton and Gilbert: Text-book of General Botany.

Books for Study:

B.A. AND B.Sc. DEGREE EXAMINATIONS.

1. Text-book of Botany by J. M. Lowson, W. O. Howarth and G. G. Warne.
2. Plant Physiology by O. Raber.
3. Introduction to Systematic Botany by A. W. Haupt.
4. Cryptogamic Botany by G. M. Smith.
5. Economic Botany by A. F. Hill.
6. Plant Physiology by Maximov.
7. Introduction to Plant Anatomy by Eames.
8. Plant Ecology by Weaver and Clements.
9. Genetics by Walter.
10. Structural Botany by Scott, Vols. I and II.
11. Elements of Plant Pathology by I. E. Melhus and G. C. Kent.
12. Flora of Madras by Gamble.

(ii-e) Zoology—Main

Theory.

I. *Invertebrata.*—The leading features in the structure, the development, the affinities and classification of the following groups :—

Protozoa — Coelenterata — Platyhelminthes — Nemathelminthes (Nematoda)—Annelida (Chaetopoda and Hirudinea—Arthropoda—Mollusca (Pelecypoda, Gastropoda and Cephalopoda)—Echinodermata.

II. *Chordata.*—The structure and the development of the vertebrate systems to be treated from an evolutionary standpoint as illustrated by representative types such as Amphioxus, Shark, Teleost, Dipnoan, Frog, Lizard, Bird and Rabbit. A study of the primitive chordates as illustrated by Sea Squirt and Balanoglossus will be expected.

An outline classification of the vertebrata and a general acquaintance with the vertebrate fauna of South India.

III. *Vertebrate Embryology.*—An elementary knowledge of the development of the chick.

IV. Outlines of the theories of organic evolution and heredity.

Practical.

Candidates will be required to identify and describe specimens and preparations illustrating points of zoological interest in connection with any of the groups mentioned above. They will also be required to make dissections and simple microscopic preparations of any of the following types :—

Earthworm: Nereis (external characters); Prawn (external characters); Cockroach; Scorpion: Fresh-water mussel; Pila and Sepia (external characters); Shark; Frog; Pigeon; Rat or Hare. Candidates may also be required to identify and draw sides of developing Chick. Dissection of the nerves in the vertebrate types will not be required except in the case of the Shark and the Frog.

Note:—At the Practical Examination, the candidates must submit their laboratory note books.

Books for Study :—

Theory :

1. Parker and Haswell: Text-book of Zoology—2 Vols. (Macmillan.)

2. Shipley and MacBride: Text-book of Zoology—2 Vols. (Cambridge University Press).

3. Borradaile: Manual of Zoology (Oxford University Press).
4. Bourne (G. C.): Comparative Anatomy of Animals, 2 Vols. (George Bell & Sons).
5. Graham Kerr: Evolution (Macmillan).
6. De Beer: Vertebrate Morphology, (Sidgwick and Jackson).
7. Patten: Development of the Chick.
8. H. H. Wilder: History of the Human Body. (Henry Holt).
9. Adam: Introduction to Vertebrates, (Chapman and Hall).

Practical:

1. Marshall: The Frog. (Macmillan).
2. Marshall and Hurst: Practical Zoology (Smith Elder & Co).
3. Lille: Laboratory Outline of Embryology (University of Chicago Press).

Reference:—

1. Sedgwick (A): Student's Text-book of Zoology—3 Vols. (Swan Sonnenschein).
2. Lang (A). Text-Book of Comparative Anatomy—2 Vols. (Macmillan).
3. Weidersheim: Elements of the Comparative Anatomy of Vertebrates (Macmillan).
4. Borradaile: Animal Life and its Environment (Henry Frowde and Hodder and Stoughton).
5. Lull: Organic Evolution (Macmillan).
6. Kingsley: Comparative Anatomy of Vertebrates (George Bell & Sons.)
7. H. Reynolds: Vertebrate Skeleton (C.U.P.)
8. Holmes: Biology of the Frog (Macmillan).
9. De Beer: Vertebrate Morphology (Sidgwick and Jackson, Ltd.)
10. Wieman; An Introduction to Vertebrate Embryology (McGraw Hill Book Co.).
11. Hyman: Manual of Comparative Vertebrate Anatomy (University of Chicago Press).

(ii-f) Geology—Main.

For the examination of 1949 only.

(i) Physiography.
(ii) Mineralogy and Crystallography.
(iii) Petrology.
(iv) Structural and Field Geology.
(v) Stratigraphy and Palaeontology

(i) Physiography.

An elementary course of lectures on the following :—

The earth as a planet, its general relations to the other members of the solar system, hypotheses as to the origin of the earth ; form, size and density of the earth ; its movements and their effects.

The Atmosphere—its composition, height, density ; pressure, temperature, moisture and movements ; weather, refraction, twilight, and aurora-borealis.

The Hydrosphere—its composition, extent and distribution, depth, temperature and movements.

The Lithosphere—the chief constituents of the earth's crust, the general characters and mode of occurrence of igneous and sedimentary rocks. Condition of the interior of the earth.

Agents of geological change.—The hypogene and epigene agents of geological change, manner and results of their action, especially as influencing earth-sculpture—the destruction, construction, and gradual evolution of the crust of the earth and of its surface features.

Fossils, the main conditions favourable for their formation and preservation and their value as interpreters of the past history of the earth.

Climates—their causes and distribution ; glacial epochs.

Simple facts about the geographical and geological distribution of the chief types of plant and animal life. Antiquity of man. Views as to the age of the earth's crust.

(ii) Mineralogy and Crystallography.

Symmetry ; lines, planes and axes of symmetry ; laws of Crystallography ; the common holohedral, hemihedral and hemimorphic crystal forms and combinations under each of the six crystal systems ; the more important types of twins and twinning ; drawing of the more important crystal forms ; systems of crystal notation, use of the contact Goniometer.

The principal physical properties of minerals which aid in the recognition of the various mineral species.

Isomorphism, paramorphism, pseudomorphism and dimorphism.

The chief characteristics of all the more abundant minerals including both those which are of geological interest and those of commercial value, their modes of occurrence and uses.

The practcial determination of the chief physical and chemical properties of the commoner ores and minerals, including the use of the blowpipe.

(iii) Petrology.

The classification and distribution of rocks, and the composition, structure, texture, origin and mode of occurrence of all the more important types and their metamorphic and altered forms.

Contact and Regional Metamorphism.

The macroscopic and microscopic examination of rocks including the determination of the simpler optical characters of the chief rock forming minerals in parallel polarized and convergent light. Preparation of diagrams or sketches to represent features observed in rock sections under the microscope. Construction and use of simple petrological microscope.

(iv) Structural and Field Geology.

The more important lithological and structural features of rocks, their origin or formation; structure of mineral veins. Diagrammatic sketches of the above.

Construction and interpretation of geological maps and sections. Tracing of outcrops. Simple problems in Structural Geology.

(v) Stratigraphy and Palaeontology.

The chief petrological and palaeontological characters of the main geological divisions and their Indian representatives and the probable physical conditions under which they were formed. Geology of India.

Fossils, their nature and preservation. The main groups of vegetable and animal life and their distribution in time.

The characters, classification and distribution of the more important types of fossils—especially Indian; identification and sketching of fossils; causes for the imperfection of the geological record; the general succession of life as revealed thereby and the general evidence furnished in support of evolution; principles of correlation; Homotaxis.

(vi) Practical Examination.

The knowledge of the candidate in accordance with the syllabus will be tested also by practical examination. *Viva voce* questions may be asked, acquaintance with field work is necessary.

Books for Study—

Judd: Students' Lyell.

Williams: Crystallography.

F. Rutley: Mineralogy.

A. Geikie: Class-book of Geology.

Hatch and Wells: Petrology (Igneous Rocks).

Hatch & Rastall: Petrology (Sedimentary Rocks)

Harker: Petrology.

Wadia: Geology of India.

Woods: Invertebrate Palaeontology.

Reference Books—

Chamberlin & Salisbury: College Geology.

Lake and Rastall: Text-Book of Geology.

Revised Syllabus in Geology—Main.

(NOTE.—*The revised syllabus will take effect from the examination of March 1950.*)

(i) PHYSIOGRAPHY.

A course of lectures on the following :—

The earth as a planet, its general relations to other members of the solar system, hypotheses as to the origin of the earth; form, size and density of the earth ; its movements and their effects.

The Atmosphere—its composition, height, density, pressure, temperature, moisture and movements: weather, refraction, twilight and aurora-borealis.

The Hydrosphere—its composition, extent and distribution, depth, temperature and movements.

The Lithosphere—the chief constituents of the earth's crust, the general characters and mode of occurrence of igneous and sedimentary rocks. Condition of the interior of the earth.

Agents of Geological Change.—The hypogene and epigene agents of geological change, manner and results of their action especially as influencing earth-sculpture ; the destruction, construction and gradual evolution of the crust of the earth and of its surface features.

Fossils, the main conditions favourable for their formation and preservation and their value as interpreters of the past history of the earth.

Climates—their causes and distribution ; glacial epochs.

Simple facts about the geographical and geological distribution of the chief types of plant and animal life. Antiquity of man. Views as to the age of the earth's crust.

(ii) MINERALOGY.

Crystallography : Symmetry ; lines, planes and axes of symmetry, laws of Crystallography; the common holohedral, hemihedral and hemimorphic crystal forms and Combinations under each of the six Crystal systems; twenty-two types of crystal symmetry as follows : Cubic system; Normal; Pyritohedral, Tetrahedral and Plagiohedral classes.

Tetragonal System : Normal, Tri-pyramidal, Pyramidal, Hemimorphic, Sphenoidal and Trapezohedral classes.

Hexagonal system : Normal, Hemimorphic, Tri-Pyramidal, Pyramidal, Hemimorphic, Trapezohedral, Rhombohedral, Rhombohedral Hemimorphic, Tri-Rhombohedral and Trapezohedral classes.

Orthorhombic system : Normal, Hemimorphic and Spheroidal classes.

Monoclinic : Normal class.

Triclinic : Normal class.

The more important types of twins and twinning; grouping and irregularities of crystals, parting planes, percussion figures, etched

figures: zonal characters; drawing of the more important crystal forms; systems of crystal notation, use of the contact and the reflecting Goniomter.

Physical mineralogy—Intermediate syllabus in greater detail.

Chemical mineralogy—In addition to Intermediate syllabus aramorphism and pseudomorphism.

Optical mineralogy—General principles of optics. R.I. under the microscope. The Becke test in rock sections. Double refraction in calcite. Polarisation by reflection, refraction and absorption. Construction of Nicol Prism. Isotropic, anisotropic, uniaxial and Biaxial crystal, and their properties. Application of the colour chart to the study of minerals. Use of quartz wedge, sensitive tint and mica plate.

Description and classification of the important rock forming minerals.

Economic Mineralogy: Processes of mineral formation, Lindgren's classification of mineral deposits; oxidation and supergene enrichment. Occurrence and distribution in India and utilization of the ores of gold copper, tin, aluminium, iron, manganese, chromium, magnesium, and zirconium. Non-metalic minerals—coal, petroleum, clay, feldspars, gypsum, asbestos, mica, talc, corundum, emery, garnet, and phosphates.

(iii) PETROLOGY.

The classification and distribution of rocks, and the composition, structure, texture, origin and mode of occurrence of all the more important types and their metamorphic and altered forms.

Contact and Regional Metamorphism.

The macroscopic and microscopic examination of rocks including the determination of the simpler optical characters of the chief rock forming minerals in parallel polarized light. Preparation of diagrams or sketches to represent features observed in rock sections under the microscope. Construction and use of a simple petrological microscope. Mechanical separation of rock-constituents, determination of the nature of rocks by means of the microscope.

(iv) STRUCTURAL AND FIELD GEOLOGY.

The more important lithological and structural features of rocks. their origin or formation; structure of mineral veins. Diagrammatic sketches of the above.

(v) STRATIGRAPHY AND PALAEONTOLOGY.

The chief petrological and palaeontological characters of the main geological divisions and the probable physical conditions under which they were formed. Geology of India.

Fossils, their nature and preservation. The main groups of vegetable and animal life and their distribution in time.

The characters, classification and distribution of the more important types of fossils—especially Indian; Identification and sketching of fossils; causes for the imperfection of the geological record; the general succession of life as revealed thereby and the general evidence furnished in support of evolution; principles of correlation; homotaxis.

List of Fossils.

Orbitolites, Alveolina, Textularia, Nodosaria, Globigerina, Fusulina, Nummulites, Radiolaria. Ventriculites, Siphonia, Tetragraptus, Didymograptus, Phyllograptus, Diplograptus, Monograptus, Rastrites, Zaphrentis, Cyathophyllum, Omphyma, Lithostrotion, Cystiphyllum, Calceola, Caryophyllia, Montlivaltia, Isastrea, Thecsmilia (trochosmilia.) Cyclolites, Helilolites, Favosites, Sringopora, Halysites. Pentremites, Encrinus, Apiocrinus, Pentacrinus, Marsupites, Cidaris, Hemicidaris, Echinus, Holaster, Micraster, Fenestella, Lingulella, Lingula, Productus, Strophemena, Orthis. Pentamerus, Spirifer, Atrypa, Rhynconella, Terebratula. Athyris. Nucula, Leda, Arca, Pectuanculus, Modiola, Pinna, Inoceramus, Avicula, Monotis, Spondylus, Plicatula, Pesten, Vola, Lima, Ostrea, Alectryonia, Gryphaea, Exogyra, Trigonia, Unio, Cardium, Cyrena, Astarte, Cardita, Diceras, Hippurites, Meretrix, Corbula, Phalodmaya, Cytheria, Pleurotomaria, Bellerophon, Euomphalus, Turbo, Trochus, Littorina, Natica, Turritella, Cerithium, Murex, Fusus, Voluta, Pleurotoma, Conus, Paludina, Physa, Lymnaea, Helix, Cypraea. Orthoceras, Nautilus, Goniatites, Ceratites, Phylloceras, Macrocephalites, Perisphinctus, Schloenbachia, Acanthocerus, Turrilites, Hamites, Belemnites, Olenellus, Paradoxides, Olenus, Phacops, Calymene.

Plant Fossils.

Sphenophyllum, Glossopteris, Gangamopteris, Ptilophyllum, Elatccladus (Taxites), Calamites, Lepidodendron, Sigillaria.

Practical work :

Crystal drawing : The more important crystal forms of the 22 classes, limited to 50 drawings.

Fossils mentioned above.

Minerals—Hand specimens of the rock forming minerals and ores —Blow Pipe tests.

Microscope work on minerals. Determination of R. I. Becke's method and relief with reference to :

Zircon, rutile, orthoclase, microcline, leucite, apatite, hypersthene, fluorite, plagioclases, hornblende and tourmaline.

Determination of the following minerals under the microscope :
Quartz, orthoclase, microcline plagioclases, hypersthene, Bronzite, diallage, diopside, augite, aegerite, hornblende, muscovite, biotite, olivine, leucite, nepheline, nosean, magnetite, zircon, apatite, tourmaline, sphene, chlorite, zoisite, epidote, calcite, andalusite, sillimanite and cordierite.

Megascopic and microscopic study of the following rock types :
Mica granite, hornblende granite, tourmaline granite, luxullianite, pegmatite, amphibole, syenite, pyroxene syenite, nepheline syenite, theralite, mica diorite, hypersthene diorite, quartz diorite, olivine gabbro, syenite porphyry, diorite porphyry, dolerite, lamprophyre, obsidian, quartz porphyry, phonolite, andesite, basalt, pyroxene granulite, biotite gneiss, garnetiferous gneiss, cordierite sillimanite gneiss, mica schist, hornblende schist, quartzites, crystalline limestones.

Sedimentary rock : Sandstone, oolitic limestone and shale.

Structural Geology : Construction and interpretation of geological maps and sections. Tracing of outcrops and contour map done in a more advanced manner than for the subsidiary. Simple problems in structural geology.

Books for study :

A Text-book of Geomorphology—Phillip G. Worcester—Chapman and Hall.

Manual of Mineralogy—Dana—Revised. C. S. Hulburt, Prentice Hall.

Elements of Mineralogy—A. N. Winchell—John Wiley.

Petrology for students—Alfred Harker. Cambridge.

Palaeontology—H. Woods. Cambridge.

Introduction to Geology of India—M. S. Krishnan.

Geology of India.—D. N. Wadia.

Books for reference :

Structural and Field Geology—James Geikie—Oliver and Boyd.

Rocks and Rock Minerals—L. V. Pirsson—J. Wiley.

Principles of Petrology—G. W. Tyrrell - Methuen.

Text-book of Mineralogy—Dana—J. Wiley.

(ii-g) Physiology—Main.

(Will be prescribed later.)

Mathematics—Subsidiary.

Algebra and Trigonometry.—Simple practical applications of the binomial, exponential, and logarithmic series.

Complex numbers, their geometrical representation ; DeMoivre's theorem and its immediate applications. Use of the expansion of the sine and of the cosine in power series.

Hyperbolic functions.

Analytical Geometry.—As for B. A. main standard excluding the general equation of the second degree and polar equations.

Calculus.—The same as for B. A. main standard.

In each of these two subjects (Algebra and Trigonometry, and Calculus) candidates will be expected to show familiarity with the graphs of the principal functions occurring in Physics and Chemistry.

The problems set for the subsidiary papers will, in general, be of a lower standard than for the main papers in the same subjects and will as far as possible relate to scientific topics.

Physics—Subsidiary.

For the examination of 1949 only.

Properties of Matter.—

Compressibility of gases at high and low pressure. Diffusion of liquids. Osmosis. Experimental study of viscosity. Pressure of a gas, and its explanation on the kinetic theory. Avogadro's hypothesis ; Van der Waal's equation.

Hydrostatics.

Pumps, pressure gauges and hydrostatic machines. Capillary phenomena and their explanation by surface tension.

Heat.—

Expansion, calorimetry and thermometry. Vapour pressure ; critical temperature and pressure. Conduction of heat and determination of conductivity. Radiation ; and absorption ; laws of cooling. Theory of exchanges ; methods of measuring radiation. Mechanical equivalent of heat. Carnot's theorem ; absolute scale of temperature.

Light.—

Velocity of light ; explanation of reflection and refraction of plane waves on plane surfaces by the wave theory. Colours of thin films ; Newton's rings. Plane transmission gratings and determination of wave length at normal incidence. Spectrum analysis. Plane polarised light : the saccharimeter.

Electricity.—

Wheatstone's bridge : specific resistance ; resistance thermometers. Conductivity of electrolytes ; ionization and migration phenomena. Accumulators and standard cells. The potentiometer system of measurement. Thermo-electric phenomena. Electro-magnetic induction. Induction coils. Elements of experimental wireless and X-rays.

Magnetism.—

Determination of the axis and moment of magnet. Determination of field strength. Magnetic induction in iron, etc. Theory of magnetism.

The magnetic field of the earth; the magnetic elements and their determination.

A practical examination will be held to test the candidates's acquaintance with the phenomena and his ability to show them, as well as his ability to make physical measurements. At the practical examination candidates must submit to the Examiner or Examiners their laboratory note-books duly certified by their Professors or Lecturers as a *bona fide* record of work done by the candidates.

List of Experiments forming the Course in Practical Physics (Subsidiary).

(A) PROPERTIES OF MATTER.

1. The balance—sensibility.
2. Surface Tension by capillary rise.
3. Do. by pull on a plate.
4. Viscosity by flow of a liquid in a capillary tube.

(B) HEAT.

5. Co-efficient of linear expansion—optical lever.
6. Do. of expansion of liquid by pyknometer.
7. Do. of pressure of air at constant volume.
8. Do. of pressure of air at constant pressure.
9. Specific heat of a solid.
10. Specific heat of a liquid using known solid.
11. Latent heat of ice.
12. Latent heat of steam.
13. Specific heat of a liquid by cooling.
14. Thermal conductivity—Searle's apparatus.

(C) LIGHT.

15. The Spectrometer—Refractive index of a solid prism by minimum deviation.
16. The Spectrometer—Refractive index of liquid by hollow prism.
17. The Spectrometer—Wave length of light by transmission grating at normal incidence.

18. Newton's rings in reflected light—radius of curvature.
19. The Polarimeter—rotation of plane of polarisation.
20. Measurement of candle power by photometer.

(D) MAGNETISM.

21. Determination of M and H.

(E) ELECTRICITY.

22. Resistances by Metre Bridge.
23. Resistances by Post Office Box. Specific resistance of material.
24. Conductivity of electrolyte.
25. Absolute measurement of current by Tangent Galvanometer; Voltameters.
26. E.M.Fs. by Potentiometer.
27. Currents by Potentiometer; ammeter calibration.
28. Resistances by Potentiometer.
29. Standardisation oi Potentiometer; voltmeter calibration.
30. Joule's Law.
31. E.M.F. of thermo-couple by potentiometer.

TEXT-BOOKS.

For Study—

Deodhar, D. B.: A text-book of Physics—The Indian Press, Ltd., Allahabad.

C. J. Smith: Intermediate Physics.

H. A. Perkins: A Course of Pbysics, (Blackie).

C. Viraraghavan: Pre-Registration Physics.

Somasundarm, Govindarajan and Narayanamurti } Subsidiary Physics, Vols. I and II, (S. Viswanathan, 2/10, Post Office Street, Madras).

For Reference—

K. S. Venkatesan: Practical Physics.

(The following alterations and additions will take effect from the examinations of March 1950) :—

THEORY.

Properties of Matter.—After 'experimental study of viscosity' *add* 'and comparison of viscosity by Ostwald's viscosity pipette.'

Hydrostatics.—*Add* 'air' before 'pump' and *omit* 'hydrostatic machines.' After the words 'surface tension' *add* 'surface tension by capillary rise and drop, weight method.'

Light.—Before 'colours of thin films' *add* 'interference—Biprism' and after 'plane polarised light' *add* 'Nicol prism.'

Electricity.—After 'resistance thermometers' *add* 'Incandescent lamps, arc lamps, gas discharge lamps—Efficiency of lamps.'

Magnetism.—After 'determination of field strength' *add* 'vibration magnetometer, comparison of moments and fields. Dia-, Para-, and ferro-magnetism, hysterisis.'

After 'Induction coils' *omit* Experimental wireless and X-rays' and *add* 'simple ideas about A.C. generation, step up and step down transformers—A.C. rectification.

Discharge of electricity through gases. The triode valve qualitative explanations of its rectifying and amplifying properties—crystal receiver—valve receiver with one stage of L F. amplification.

X-rays—production and properties.

PRACTICAL COURSE.

The following experiments are to be added at the appropriate places and the whole renumbered :—

(1) Surface tension by drop weight method (interface also.)

(2) Comparison of viscosities by viscosity pipette.

(3) μ for a solution by total reflection air cell.

(4) μ for a liquid by 'liquid lens' method.

(5) Vapour pressure of a liquid (Joly's bulb method).

(6) Temperature co-efficient of resistance.

(7) Figure of merit of a galvanometer for steady currents and galvanometer resistance—half deflection method.

(8) Comparison of magnetic moments.
Deflection and vibration methods.

Chemistry—Subsidiary.

(For the examination 1949 only).

I. *General Chemistry*—

Atomic Theory.

Methods of determining Equivalent, Atomic weights (including at least one classical method), Molecular weights (vapour density methods) and Valency.

Vapour pressure of solutions ; Osmotic pressure; Molecular weights in solution. Heats of solution and neutralisation.

Electrolytic Dissociation ; Conductivity.

Law of Mass action (homogeneous systems only) ; Velocity of reactions.

II. *Inorganic Chemistry.*—

(*a*) Periodic Classification and the Periodic Table.

(*b*) Preparation (laboratory methods and brief outlines of industrial methods) ; properties and uses of Hydrogen, Oxygen, the Halogens, Sulphur, Nitrogen, Phosphorus, Arsenic, Carbon, Silicon, Boron and their important compounds.

(*c*) Sources, extraction, properties and uses of Sodium, Potassium, Copper, Silver, Gold ; Calcuim, Strontium, Barium, Magnesium ; Zinc, Cadmium, Mercury ; Aluminium, Tin, Lead ; Antimony, Bismuth ; Chromium, Manganese, Iron, Cobalt, Nickel and their most common compounds studied from the periodic standpoint.

III. *Organic Chemistry.*—

Purification of organic compounds, Qualitative and Quantitative Analysis, Isomerism, Polymerism.

Methane, ethylene, acetylene, methyl halides, methyl alcohol, ethyl alcohol, ether, acetaldehyde, acetone, acetic acid, ethyl acetate, acetamide, oxalic acid, glycerine, amines, fats, oils and soaps, glucose, cane-sugar and starch.

Benzene, nitrobenzene, aniline, phenol, toulene, benzyl alcohol ; benzaldehyde, benzoic acid.

IV. *Practical Chemistry.*—Qualitative analysis of inorganic substances containing not more than one acid and one base. Simple volumetric analysis with standard solutions of acids, alkalis, potassium permanganate, iodine and sodium thiosulphate.

Note.—The paper in General and Inorganic Chemistry will consist of two parts, Part A on General Chemistry and Part B on

Inorganic Chemistry. Usually two questions are to be answered out of three questions set in Part A, and four questions out of five in Part B.

TEXT-BOOKS.

Books for Study—

Smith: Introduction to Inorganic Chemistry (Bell).

Senter: Outlines of Physical Chemistry (Methuen).

Thorpe: History of Chemistry, 2 Volumes (Watts).

Caven: A short system of Qualitative Analysis.

Caven: Quantitative Chemical Analysis, Part I, (Blackie).

Thorpe: Inorganic Chemical Preparations (Ginn).

Text-book of Physical Chemistry by J. B. Firth (University Tutorial Press).

Holmyard: Introduction to Organic Chemistry (Arnold).

Lowry and Caven: Intermediate Chemistry (Macmillan).

Durrant: General and Inorganic Chemistry (Longmans).

Reference—

Partington: Text-book of Inorganic Chemistry (Macmillan).

Lowry: Historical Introduction to Chemistry (Macmillan).

Chemistry—Subsidiary.

REVISED SYLLABUS.

[NOTE.—*The revised syllabus will take effect from the examination of March 1950.*]

In addition to the syllabus prescribed for the Intermediate, the student shall be examined in the following portions:—

Physical and Inorganic: (Three hours).

The paper shall be in two parts A and B, Part A, Physical and Part B, Inorganic, the candidates answering three questions from each Part.

Physical—

History of Chemistry to the time of Dalton. Finer methods of purification of substances for equivalent and atomic weight determination. Modern views as to the structure of the atom.

Development of valence theories. Gas laws and kinetic theory (no derivation of expressions). Liquefaction of gases. Properties of dilute solutions. Osmotic pressure and its determination. Laws of osmotic pressure. Raoult's law. Depression of freezing point and elevation of boiling point of solutions. Molecular weight determinations. Abnormal molecular weights. Law of Mass action. Verification of the law, Application to homogeneous gaseous systems such as, the dissociation of hydrogen iodide, phosphorus pentachloride and nitrogen tetroxide. Influence of catalysts: Haber and Contact processes. Esterification of organic acids. Velocity of reactions: Reaction velocity of (1) Decomposition of hydrogen peroxide, Inversion of cane sugar. (2) Saponification of esters by alkali. Relative strengths of acids. Thermochemistry: Heat of solution, Hess's law. Heat of neutralization. Theory of electrolytic dissociation. Specific Equivalent and Molecular conductivities. Variation of conductivity with dilution. Degree of dissociation. Mobility of ions. Kohlrausch's law. Experimental determination of transport numbers of silver and nitrate ions in silver nitrate. Dilution law. General ideas of use of acid-base indicators. Hydrogen ion concentration (elementary treatment). Colloids: Differences between true solutions and colloidal solutions. Preparation and properties of colloids. Catalysis.

Inorganic—

Inert gases. Hydrogen peroxide, Ozone (constitution), Constitution of bleaching powder. Bromates and Iodates. Peracids of sulphur. Sulphur mono chloride. Acid chlorides of sulphur acids. Fixation of atmospheric nitrogen. Hydroxylamine and hydrazine. Superphosphate of lime and hypophosphites. Water gas. Glass. Chemistry of cobalt and nickel.

Organic—(Paper II): (Two hours).

Purification of organic compounds. Criteria of purity. Quantitative determination of the elements, carbon, hydrogen, nitrogen, chlorine and sulphur. Empirical and molecular formulae. Paraffin hydrocarbons up to pentane. Homologous series. Polyhalogen derivatives of ethane. Alcohols up to butyl alcohols. Ether. Aldehydes and ketones, a comparative study with special reference to acetaldehyde and acetone. Acids up to butyric acid. Monochloracetic acid. Derivatives of acids such as acid chlorides, anhydrides, nitriles, amides and esters. Esters of inorganic acids such as dimethyl sulphate, ethyl nitrite. Nitro ethane. Nitromethane. Methyl amine (mono, di and tri). Tetramethyl ammonium chloride. Lactic acid. Optical activity. Dibasic acids such as oxalic and succinic acids. Polyhydric alcohols: Glycerol, its preparation and properties.

Sugars: Glucose, Fructose, Cane-sugar (structure not expected). Properties, reactions and methods of differentiation.

Benzene, Nitrobenzene, Chlorobenzene, Benzene sulphonic acid, Aniline, Diazonium compounds and their reactions. Toluene,

Benzil chloride, Benzal chloride, Benzotrichloride, and the Chlorotoluenes. Benzaldehyde, Benzoic acid, Benzoylchloride. Benzamide, Benzonitrile and Ethylbenzoate. Acetophenone and Benzophenone, Phenol, Benzyl alcohol, Picric acid, Salicylic acid. Comparison of benzene and naphthalene. Phthalic acid, Phenolphthalein.

Botany—Subsidiary

(1) The structure and life-history of the following :—

Bacteria, Oscillaria, Nostoc, Chlamydamonas, Pandorina, Eudorina, Pleodorina, Volvox; Ulothrix, Oedogonium, Spirogyra, Ectocarpus, Polysiphonia, Nitella, Mucor, Peziza, Puccinia, Agaricus, Usnea, Riccia, Funaria, Selaginella, Lycopodium, Lastrea, Cycas and Pinus.

(2) External morphology of flowering plants.

(3) The general principles of classification and the characteristics of the following Natural Orders :—

Anonaceae, Nymphaeaceae, Leguminosae, Malvaceae, Rutaceae, Myrtaceae, Cucurbitaceae, Rubiaceae, Compositae, Apocynaceae, Asclepiadaceae, Convolvulaceae, Solanaceae, Acanthaceae, Labiatac, Amarantaceae, Euphorbiaceae, Urticaceae, Liliaceae, Scitamineae, Orchidaceae, Palmae, Gramineae.

(4) Plant Physiology :—

Chemical composition of the plant. Soil and its nature, Photo-synthesis, Transpiration, Respiration, Metabolism, Heterotrophic Plants, Growth, Movements, Irritability, Reproduction, Cross and Self Fertilization, Variation, Heredity and Mendelism. Theories of Evolution and the Origin of Species.

(5) Histology :—

Cell-structure and cell-division, plastids, cell-sap, other cell-contents, the origin, nature and development of plant tissues. Primary and secondary tissues and their distribution in the plant body.

(6) Study of the following South Indian crop plants :—Paddy, Sugar-cane and Cotton.

Note :—The Practical Examination will be of three hours' duration.

Zoology—Subsidiary.

Scope of Zoology.—The leading features of the following phyla and the structure and life-history of the following types, dealt with from the point of view of evolutionary relationships and adaptation to environment.

I. Invertebrata :

Protozoa :—Rhizopoda : Amoeba and Entamoeba.

Mastigophora : Euglena and Trypanosome.

Sporozoa : Monocystis and Plasmodium.

Ciliata : Paramoecium and Vorticella.

Types : All the above forms.

Coelenterata :—

Hydromedusae : Hydra, Obelia and Halistemma.

Scyphomedusae : Aurelia.

Anthozoa : Sea-anemone.

Ctenophora : Pleurobrachia.

Types : Obelia, Aurelia and Sea-anemone.

Platyhelminthes :—Planarian, Liver-fluke and Tapeworm.

Types : All the above forms.

Nemathelminthes :—Ascaris and Ancylostoma.

Type : Ascaris.

Annelida :—Chaetopoda and Hirudinia.

Types : Nereis, Earthworm and Leech (Hirudinaria).

Arthropoda :—Crustacea : Entomostraca and Malacostraca.
Onychopora : Peripatus.

Myriapoda : Centipede (Scolopendra) and Millepede (Spirostreptus) both external characters only.

Insecta : Orthoptera, Coleoptera, Isoptera, Lepidoptera, Hemiptera, Diptera and Hymenoptera.

Arachnida ; Xiphosura (external characters), Scorpionida and Araneida (external characters).

Types : Streptocephalus, Lepas, Sacculina, Prawn (Penaeus), Cockroach, and Scorpion. The life-history of Termite, Silk-moth, House-fly, Mosquito and Honey-bee will also be expected.

Mollusca :—Lamellibranchiata, Gastropoda and Cephalopoda.

Types: Fresh-water mussel (Lamellidens), Pila and Sepia.

Echinodermata :—Type: Starfish.

N.B.—An elementary knowledge of preventive methods in the case of disease producing parasites of man will be expected.

II. Chordata:

An outline classification of the chordata and the structure and the evolution of the vertebrate systems as illustrated by representative types such as Amphioxus, Shark, Teleost, Dipnoan, Frog, Lizard, Bird and Rabbit.

The treatment of the types will be less exhaustive than for the main.

An elementary knowledge of the development of Amphioxus, Frog and the embryonic membranes of the Chick will be required.

III. An elementary knowledge of the theories of Organic Evolution.

IV. Practical :

Candidates will be required to identify and describe specimens and preparations illustrating points of Zoological interest in connection with any of the types mentioned above. They will be also required to make dissections and simple microscopic preparations of the following :—Earthworm, Prawn (external characters only), Cockroach, Fresh-water mussel (nerves excepted), Pila (external characters only), Scorpion (nerves excepted), Frog, Calotes, Pigeon, Rat. (Dissections of the nerves of the vertebrates will not be expected except in the frog).

Books for study :—

Theory.—

1. Shipley and MacBride: Text-book of Zoology (Cambridge University Press).
2. Borradaile: Manual of Zoology (Oxford University Press).
3. Kerr: Organic Evolution (Macmillan).
4. Hegner: College Zoology (Macmillan & Co., New York).

Practical.—

1. Marshall; The Frog (Macmillan).
2. Marshall and Hurst: Practical Zoology (Smith Elder & Co.)

Reference.—

1. Lull: Organic Evolution (Macmillan).
2. Metcalfe: Evolution.
3. Parker and Haswell: Text-book of Zoology (Macmillan).

Geology—Subsidiary.

(For the Examination 1949 only).

Mineralogy.—The more important rock-forming minerals, their composition and general physical characters and their characteristic alteration products. An elementary knowledge of crystallography is expected.

Petrology.—Origin, classification and the distinctive characters of the leading types of sedimentary, igneous and metamorphic rocks.

Physical Geology.—The general nature and relation of the main agents of geological change, epigene and hypogene; and their action.

Structural Geology.—Elementary knowledge of rock-structures, stratification, dip, strike, outcrop, outlier, inlier, folds; faults, cleavage, joints, unconformity and overlap: surface features as influenced by the nature and disposition of the rocks; water supply.

Stratigraphical Geology.—Rocks as embodying the history of the earth; fossils, their mode of formation and value in Geology and also in the biological sciences; the order of superposition; the geological record; its general conclusions relating to former changes in the physical features of the earth and also in the character of the organic forms; the order of succession of plant and animal life on the surface of the globe; the theory of evolution; an elementary knowledge of Indian Geology is required.

The practical examination may include the interpretation of maps and tectonic models and drawing of sections across them, of representations of scenery and also the identification and description of the more important types of minerals, rocks and fossils including models.

Candidates will be expected to show some acquaintance with field work.

Books for study—

C. Lapworth: Intermediate Text-book of Geology.
A. Geikie: Class-book of Geology.
L.V. Pirsson & C. Schuchart: Introductory Geology.
L.V. Pirsson & A. Knopf: Rocks and Rock Minerals.
W.W. Watts: Geology for Beginners.

Revised Syllabus for Geology—Subsidiary.

[Note:—*The revised Syllabus will take effect from the examination of March 1950.*]

General Geology: The syllabus of Intermediate to be done in greater detail with the following additions :—

Age of the earth, Marine transgression and regressions. Raised beaches. River terraces and Origin of coral reefs.

Palaeontology: Introductory portion of the Intermediate syllabus to be done in greater detail with the following :—

(1) Zoological characters and chief divisions of Protozoa—Fossils :—textularia, fusulina and nummulites.

(2) Zoological characters of the Porifera. Canal system of the sponges—Ventriculites.

(3) General characters of the Graptolites—monograptus, diplograptus.

(4) General characters and divisions of the Coelenterata—corals—cyathophyllum, zaphrentis, calceola, thecosmilia, favosites, halysites, lithostrotion.

(5) General characters of Echinodermata—echinoderms—cidaris, micraster, holaster, encrinus and pentremites.

(6) General characters of Brachiopoda and brachiopod shell, Fossils—lingula, productus, pentamerus, spirifer, rhynconella and terebratula.

(7) General characters of the Lamellibranchiata and lemellibranch shell—Fossils—area, inoceramus, pecten, ostrea, gryphaea alectryonia, pectunculus, hippurites, spondylus, unio, cardita and trigonia.

(8) General characters of the Gasteropods and gasteropod shell—Fossils—Bellerophon, natica, turritella, cerithium, murex, fusus, conus, voluta and physa.

(9) General characters of the Cephalopods, Nautiloidea and ammonoidea—Fossils—belemnites, nautilus, goniatites, orthoceras, ceratites, schloenbachia.

(10) General characters of the Trilobita—Fossils—Calymene, paradoxides, phacops, trinucleus.

(11) Plant fossils—glossopteris, gangamopteris, ptilophyllum, calamites and lebidodendron.

Structural and Field Geology and Stratigraphy: Order of superposition, conformable and unconformable beds, overlaps, lithology and fossils in correlation; facies ; division of rocks into groups, systems, etc., and geological time into era, epoch, etc.

Dip, strike and outcrop; variations in outcrops with reference to dip of bed and slope of valleys; types of unconformity; folds, synclines, anticlines, overfolds and fan structure. Faults, normal and reverse faults, inliers and outliers.

A course of lectures to give a comprehensive general outline of Indian Stratigraphy.

Crystallography: Definition of a crystal, crystalline and amorphous, external form, variation of form and surface, law of constancy of interfacial angles, symmetry—planes, axes and centre, axial ratio, parameters, indices, symbol, Weiss, Naumann and Millers, law of rationality of indices, hemihedrism.

The seven normal classes and their forms and phyritohedral class, tetrahedral class, sphenoidal class, rhombohedral class and trapezohedral class (quartz type).

Mineralogy: Physical—crystalline aggregates, columnar and fibrous structure, lamellar structure, granular structure, imitative shapes and pseudomorphs.

Cleavage, parting, percussion figures, fracture, hardness, tenacity, sp. gr. and its determination.

Isomorphous mixture, isomorphous replacement, dimorphism, isodimorphism and pseudomorphs.

Minerals: Quartz, and the more important varieties, feldspars, orthoclase, microcline, plagioclases, hypersthene, enstatite and augite, hornblende, actinolite and tremolite.

Olivine, garnet, nepheline, leucite, sodalite, beryl, epidote, staurolite, kyanite, apatite, talc, chlorite, serpentine (asbestos), kaolin, bauxite, calcite, dolomite, siderite, magnesite, selenite, gypsum, baryte, celestite, anhydrite, corundum, diamond and graphite.

Ores: Magnetite, haematite, limonite, ochre, Ilmenite, chromite, pyrite, chalcopyrite, galena, sphalerite, pyrolusite, psilomelane, malachite, azurite, graphite.

Petrology: Igneous rocks: their distinguishing characters, intrusive modes of occurrence—dike, sheet, laccolithe, neck, stock, batholith, and lava flows. Textures and structures for megascopic study; jointing in rocks.

Principles of classification, megascopic classification.

Description of rock types; Granite, syenite, diorite, gabbro, norite, peridotite, pyroxenite, amphibolite, porphyry, dolerite, rhyolite, trachyte, andesite and basalt.

Metamorphic Rocks: Metamorphic agencies and kinds of metamorphism. Texture in metamorphic rocks.

Rock types: gneiss, slate, schist, phyllite, marble and serpentine.

Sedimentary Rocks: Classification into mechanically formed, chemically formed and organically formed rocks.

Mechanically formed: Soil, blown sand, grit, sand-stone, clays, boulder clay.

Chemically formed:—Tufa, dolomite, rock salt, gypsum, flint and ironstones.

Organically formed: Limestones, carbonaceous rocks and coprolites.

Practical work will comprise of the following:—

A study of the more important crystal models : The fossil types mentioned—megascopic study of the minerals and rocks.

Exercises in plotting of outcrops on contour maps. Reading of maps relating to beds with thickness, unconformities, simple folds and an acquaintance with strike and dip faults.

Sketch maps of the following: Physiographical features of India, Dharwar rocks of South India. Cuddapah and Vindhyan systems, Gondwana system, Cretaceous of Peninsular India and Deccan trap.

Books recommended for study—

Text-book of Geology: Longwell, Knopf and Flint, John Wiley.

Geology: Principles and Processes—Emmons and others.

Introduction to Geology: Bailey, Weir and others. Mac.

Reference—

Physical Geography of India for Indian Students. C. S. Fox. Macmillan & Co.

Physiology—Subsidiary.

A knowledge of the essential facts of the structure and functions of the body as indicated below :—

The animal cell—properties of living protoplasm—histology of the tissues and the principal organs of the body.

Circulation:—Structure of the heart—the cardiac cycle and the events during the cycle—causation of the heart-beat—properties of cardiac muscle—innervation and regulation of the heart-beat.

Courses of the circulation of blood—blood-pressure—velocity of blood—pulse—flow of blood in capillaries and veins—vasomotor nerves.

Blood.—Composition of blood and its functions—the blood corpuscles—haemoglobin—haemolysis—coagulation of blood.

Lymph.—Formation, circulation and functions.

Spleen :—Structure and functions.

Respiration :—The respiratory mechanism—volume of air breathed in—blood gases—gaseous exchange in the lungs and tissues—composition of expired and alveolar air—regulation of respiration—asphyxia.

Nutrition :—Composition of the common food substances, *viz.*, milk, eggs, bread, rice, meat, etc.—secretion and properties of the digestive juices and bile—movements of the stomach and intestines, absorption of food.

Essential facts of protein, carbo-hydrate, and fat metabolism—basal metabolism—nitrogen balance.

Requirements of normal diet.

The body temperature and its maintenance.

Excretion :—Composition and secretion of urine—micturition.

Skin—its structure and functions.

Endocrin organs :—An elementary knowledge of the more important internal secretions.

Neuro-muscular system :—Structure and properties of muscle—physical and chemical changes during contraction—fatigue—structure and functions of nerve-fibres. The general structure of the different parts of the central nervous system—reflex action—sensations and their nerve-paths—mechanism of voluntary movements and their co-ordination—a general account of sense organs.

Practical :—Candidates are expected to perform simple experiments on the nerve-muscle preparation, the spinal frog, and the frog's heart. They should know how to measure respiratory volumes and blood pressure and be able to make simple qualitative tests on proteins, fats and carbo-hydrates, milk, urine, and to identify microscopic preparations of tissues and the more important organs.

Books for study :—

1. Halliburton and McDowall : Handbook of Physiology (John Murray).
2. Bainbridge and Menzies : Essentials of Physiology (Longmans).
3. Bremer : Text-book of Histology (Blakiston).
4. Schaefer : Experimental Physiology (Longmans).
5. Halliburton, Hewitt and Robson : Essentials of Chemical Physiology.
6. Parsons : Fundamentals of Biochemistry (Heffer).

For reference :—

1. Howell : Text-book of Physiology (Saunders).
2. Starling : Principles of Human Physiology (Churchill).
3. Evans : Recent Advances in Biochemistry (Churchill).
4. Pryde : Recent Advances in Physiology (Churchill).
5. Harris : Experimental Physiology (Churchill).
6. Schaefer : Essentials of Histology (Longmans).
7. Bodanski : Introduction to Physiological Chemistry (Wiley).
8. Cole : Practical Physiological Chemistry (Heffer).

Mechanical Engineering.

As a Subsidiary Subject only to Physics.

Graphics, Machine Drawing and Strength of Materials:—More advanced than for the Intermediate with the following additions:—

Geometrical Drawing—Simple interpenetration of solids, Elementary notions of perspective. Strength of Materials—Gordon's, Rankine's and Euler's formulae.

Heat Engines:—More advanced than for the Intermediate.

Steam-tables.—Expansive working of steam, Indicated horse power. The indicator and indicator diagrams. Mechanical efficiency. Entropy.

Steam Engines.—Modern types of land, marine and locomotive engines; uniflow engines; steam turbines, their description and working.

Internal Combustion Engines:—Modern engines. Modern engine cycles and their applications. Types of engines with reference to available fuels, such as, petrol, kerosene, crude oil, gas, (suction and pressure).

Fuels:—Characteristic properties of common fuels—coal, charcoal, wood and oils. Calorific values.

Boilers:—Description and working of common types of boilers and their accessories.

Materials:—Same as for Intermediate but more detailed.

Connections:—Same as for the Intermediate but more advanced. Efficiency of simple types of riveted joints. Treatment of 3 or 4 overlapping plates. Connection of plates with angle and T irons. Flange joints. Different forms of screw threads. Cotter fastenings.

Shafts and bearings:—Shafts and shaft couplings. Clutches, Universal joints. Bearings for horizontal and vertical shafts. Ball and roller bearings. Methods of lubrication.

Belt and toothed gearing:—Same as for Intermediate but more advanced. Worm and helical gearing.

Engine Details:—Usual forms of cranks and levers. Methods of fixing crank pins. Forms of eccentric. Ordinary arrangements of connecting rods, Cross heads and coupling rods. Forms of cylinders, flanges and covers. Simple forms of pistons. Attachment of piston rods. Simple forms of stuffing box and gland. Construction of simple slide valve.

Pumps:—Types of pumps—reciprocating and rotary. Relative advantages and applications.

PRACTICAL WORK.

The following indicates broadly the scope of the practical work.

1. More advanced exercises in wood work, forging, soldering, casting, fitting and wood and metal turning, specially with reference to scientific instruments.

2. Finding calorific values of solid, liquid and gaseous fuels.

3. Viscosity of lubricating oils by Viscometer.

4. Determination of flash points of common fuel oils.

5. Testing of engines.

   (a) Taking indicator diagrams and determination of I.H.P. and B.H.P. and calculation of mechanical efficiency.

   (b) Testing for fuel consumption per B.H.P. hour.

   (c) Finding heat efficiency.

Note:—At least two hours a week should be devoted to practical work.

Books for study—

Applied Mechanics—Mechanics applied to Engineering by Goodman, Longmans, Green & Co.

Machine Drawing and Design by Low and Bevis.

Steam and other Engines by Duncan.

Heat Engines by Moorfield and Winstonley.

Electrical Engineering.

As a Subsidiary Subject only to Physics.

1. *General principles*:—More advanced course than for the Intermediate with the following additions:—

Magnetisation curves of iron and steel. Calculation of Ampere turns in magnetic circuits of D. C. machines. Eddy currents. Hysteresis. Armature reaction. Capacity.

2. *Measurements*:—In addition to that for the Intermediate, frequency meters, power factor meters, and three phase watt-meters.

3. *Generators*:—Continuous current generators, alternators and synchronising alternators, transformers; their characteristics and methods of testing efficiency and voltage regulation. Transformers and their uses and connections. Parallelling of generators and transformers.

4. *Motors*:—Continuous current motors, synchronous and induction motors, their characteristics and uses; methods of starting. Principle of working of a rotary converter.

5. *Batteries*:—Secondary batteries and their practical applications.

6. *Power Distribution*:—Methods of distributing electric power in streets; overhead and underground mains; D. C. three wire system. A. C. three phase four wire system. Calculation of conductor sizes. Properties of insulation materials.

7. *Illumination*:—Candle power, polar curves. Use of shades and reflectors.

8. Design and management of a small house lighting power plant with storage battery.

The magneto. Any one type of an automobile lighting system.

LABORATORY COURSE.

The following indicates broadly the scope of the practical work.

Same tests as for the Intermediate with insistance on greater accuracy of results, with the following additions:—

Direct Current:—

1. Calibration of an ammeter against a standard instrument.

2. Calibration of a voltmeter against a standard cell with a dial type of potentiometer.

3. Measurement of hysteresis by Ewing's hysteresis tester.

4. Shunt motor. Approximate predetermination of efficiency of shunt motor at varying load currents by measurement of power taken at no load.

5. Series Motor (a) speed characteristic, (b) efficiency by a brake test.

6. Compound wound motor, (a) reversal of compound wound motors additive and differentially compounded, (b) speed characteristic, additive compound, (c) speed characteristic differentially compounded (d) efficiency of a compound wound motor by a brake test.

7. Generators, (a) separation of iron, friction and copper losses of a generator at full load, (b) calculation of efficiency from losses, (c) approximate efficiency of a shunt generator by measurement of power taken when run as a motor on no load, (d) excitation characteristic of generator, (e) parallelling of two shunt generators and verification of sharing of load according to their separate characteristics.

8. Compound wound generators:—(a) load characteristic separately excited additive compound, (b) load characteristic, self excited additive compound.

9. Operation of a simple electric lighting plant with charging dynamo and regulating battery.

Alternating Current:—

10. Comparison of capacity against a standard.

11. Measurement of capacity from voltage applied, frequency and resulting current.

12. Measurement of impedance (involving also capacity).

13. Efficiency of a three phase alternator by measurement of iron, friction and copper losses.

14. Alternators :—

(a) Load characteristic of a three phase alternator with non-inductive load.

(b) Effect of unbalanced load.

(c) Parallelling of single and three phase alternators; synchronising by lamps; distribution of load between alternators.

15. Synchronous motors :—

(a) Efficiency by brake test.

(b) Effect on power factor for particular load when over and under excited.

16. Transformers.

(a) Efficiency of single phase transformers from losses.

(b) Star and delta connections of transformers. Parallelling of single phase transformers.

(c) Efficiency and voltage regulation of transformers, connected three phases by actual loading and by wattmeter measurements on the primary and the secondary sides.

17. Measurement of power:—

(a) By two watt-meter method.

(b) Measurement of power factor in a three phase circuit.

18. Induction motor. Three phase squirrel cage and slip ring types.

(a) Speed variation on load. Approximate slip.

(b) Efficiency from brake test.

(c) Power factor improvement on load.

(d) Effect on power factor with resistance in motor circuit.

19. Calibration of a three phase watt hour meter against wattmeters and standard clock.

20. Illumination—Polar curves of incandescent lamps.

21. The running of a simple electric generating plant, comprising of an engine, dynamo and storage battery.

Note—At least two hours a week should be devoted to the laboratory course.

Books for study:

Elementary Electrical Engineering—Clayton and Shelley—Longmans, Green & Co., London.

Electrical Engineering—Gray—McGraw Hill Publishing Co., London.

Anthropology.

As a Subsidiary Subject only to Botany, Zoology and Geology.

I. Physical Anthropology—

Man as a primate. Distinctive characters of primates, stereoscopic vision, brain size, emancipated hands and tendency for the recession of the snout. Simplified type of mammalian brain. The neopallium and the archipallium. Difference between the gorilla and man in the characters of the skull, brain, vertebral column, feet and hands. Fossil man, the Cromagnon type. Fossil hominids—Pithecanthropus, Sinanthropus, Eoanthropus, Neanderthal race. Evolution of man.

Brief outline of the principles of Anthropometry. Use of the anthropometer, spreading calipers, sliding compass, colour standards. Estimation of the age of cranial material. Landmarks on the head and face. Measurements on the living, of stature, head and face. Somatological observations on eyes, nose, ear, lips, chin, jaws, skin. Elements of craniometry. Sex identification in crania. Landmarks and measurements of crania. Anthropometric indices of head and face measurements.

Racial characters. Raciology, the study of human variations. Race as sub-species. Race characters. Types of living Man and their distribution. The Andamanese, Kadars, Paniyas, and Savaras from the point of view of the racial history of India.

II. Prehistory.—Outlines of Paleolithic, Mesolithic, Neolithic, Chalcolithic, Bronze Age and early Iron Age cultures. Main divisions of the Paleolithic period. Fine Arts of the Stone Age. Important centres of Stone Age cultures in South India. Types of Indian dolmens, cists, and urn burials.

III. Social Anthropology.—Social organization. Tribe, Clan. Dual organization among the Todas. Family, matrilineal and patrilineal. Types of joint families. Kinship grouping and relationship systems. Descriptive and classificatory relationship terms. Functions and privileges of kinship. Marriage. Rules regulating marriage. Exogamy and Endogamy. Incest. Marriageable and non-marriageable relatives. Preferred and enjoined mates. Cross-cousin marriage. Matrilocal and patrilocal marriages. Monogamy, Polygamy, Polyandry, Polygyny. Marriage by capture, service, exchange and purchase. Bride wealth. Marriage ceremonies. Puberty and initiation rites. Religion. Religion in relation to magic. Magico-religious beliefs and practices. Animism. Cult of the Dead. Ancestor Worship. Taboos. Totemism—Social and

religious aspects. Totemic survivals in India. Treatment of the Dead. Funeral ceremonies. Burial and cremation. Grave goods. Folk songs and folk-lore. Amusements and recreations.

IV. Material culture.—Material culture and economic pursuits of primitive man. Food collecting, hunting, fishing, domestication of animals and plants. Primitive agriculture. Primitive arts and crafts, ornaments, habitations, transport. Primitive war.

V. Practical work—

Candidates should be familiar with somatometrical landmarks on living persons and with external characters used in somatology. They should be acquainted with the use of simple anthropometric instruments and should be able to make measurements on the cranium.

They should be able to describe the common technological appliances of primitive tribes used in hunting, fishing, agriculture and pottery making.

Candidates should be able to identify and discribe Stone Age artifacts of South India.

Books for study—

Physical Anthropology and Prehistory—

C. P. Stibbe: An Introduction to Physical Anthropology. (Edward, Arnold & Co., 1938).

A. C. Haddon: Races of Man. (Cambridge University Press).

B. S. Guha: Oxford Pamphlets on Indian Affairs, 1944—Racial elements in the population.

L. S. B. Leakey: Adam's Ancestors. (Methuen & Co., London).

Horniman Museum and Library Series—From Stone to Steel. (Horniman Museum, London).

Social Anthropology and Material Culture—

R. H. Lowie: Introduction to Cultural Anthropology. (Harrap, London).

Horniman Museum and Library Series.

(1) Evolution of Domestic Arts, Parts I and II (2) War and the Chase.

R. U. Sayce: Primitive arts and crafts. (Cambridge University Press, 1933).

Books for reference—

Physical Anthropology and Prehistory—

W. L. H. Duckworth: Morphology and Anthropology.

P. Mitra: Prehistoric India (2nd Edition) (Calcutta University).

R. Bruce Foote: Indian Prehistoric and Protohistoric Antiquities (in two volumes). (Government Press, Madras).

G. G. MacCurdy: Human Origins. (Appleton & Co., New York).

Social Anthropology and Material Culture.—

R. H. Lowie: Primitive Society. (Routledge & Sons, London).

W. H. R. Rivers: The Todas (Kegan Pual, New York).

W. H. R. Rivers: Social Organization. (Kegan Paul, New York).

British Association for the Advancement of Science—Notes and Queries in Anthropology. (Royal Anthropological Institute, London).

GROUP (iii-a)—PHILOSOPHY.

1949

Psychology:—

Woodworth's *Psychology* (12th edition, revised and reset).

Ethics—

McKenzie's *Manual of Ethics.* (Sixth Edition)—Books I and II, and Chapters 2, 6 and 7 of Book III.

European Logic and Theory of Knowledge.—

Bosanquet's *Essentials of Logic* (first four lectures).

Creighton and Smart: *Introductory Logic*—Part III.

Political Philosophy.

Text-book.—

Lord: Principles of Politics.

For consultation.—

Joad: Introduction to Modern Political Theory.

Sabine: History of Political Thought—Chapters 1—8 and 28—34.

Indian Logic.—

For study.

Tarkasangraha of Annambhatta. (Sections 28—42, beginning with "buddhi" and ending with "smrti").

For reference.—

S. Kuppuswami Sastri: A Primer of Indian Logic.

S. Parthasarathi: Tarkasangraha.

Athalye and Bodas: Tarkasangraha.

Indian Philosophical Classic :—

Samkhya Karika by Iswara Krishna.

European Philosophical Classic.

Berkeley's Principles of Human Knowledge.

1950.

The same as for 1949 with the following changes :—

European Philosophical Classic: Hume: Enquiry concerning Human understanding (less Chapter on Miracles).

Indian Philosophical Classic for 1950 *and* 1951 : Vedantasara.

Group (iii-c)—Psychology

1. *General Psychology*: R. S. Woodworth—Psychology (15th Edition 1945).

2. *Introduction to Abnormal Psychology*: "An Outline of Abnormal Psychology" edited by Gardner Murphy. (The Modern Library, N. Y.).

   For consultation :

   Bernard Hart : Psychology of Insanity.

   William Br own : Psychological methods of healing.

3. *Child Psychology* : Joseph William Nagge—Psychology of the child, omitting Chapters 1, 2 and 6 (The Ronald Press Co., New York 1942).

   For consultation :

   Naomi Horsworthy and Mary Thodore Whitley—The Psychology of Childhood—Revised Edition 1937, Macmillan Company.

   A. T. Jersild—Child Psychology (Prentice Hall Series N. Y. 1935).

   Or

   Adolescent Psychology: Averill, L. A.—Adolescence, 1936 (Harrap & Co.).

For consultation :

Hollingworth, L. S.—The Psychology of the Adolescent (1930).

Cole, L. ; Psychology of Adolescence (1936).

Conklin, E. S. : Principles of Adolescent Psychology (Henry Holt, N. Y. 1935).

4. *Elements of Social Psychology :* Allport, F. H. : Social Psychology.

For consultation :

Ross, E. A. : Social Psychology.

Ellwood, C. A. : The Psychology of Human Society.

5. *An Aspect of Psychology* (to be prescribed from year to year). Will be prescribed later.

GROUP (iv-a)—HISTORY AND ECONOMICS
GENERAL INDIAN HISTORY.

Syllabus.

[COMMON TO GROUPS (iv-a), (iv-b) AND (iv-c).]

Introductory—Historical Geography of India, Greater India—Sources of Indian History.

Divisions of the Subject:—

Introductory : Pre-historic.

(1) Early Period 600 B C. to 650 A.D.C.

(2) Mediaeval 650 A.D. to 1500 A.D.

(3) Modern from 1500 A.D.

Introductory : Pre-historic—The stone and the copper ages—Stages of evolution—Indus Valley culture and its general relation to (*a*) Sumerian, (*b*) Tamil and (*c*) Vedic cultures. Vedic Literature. Religion and Polity. Dravidian India—Aryanisation of India—its nature and extent.

1. Early period.—600 B.C. to 650 A.D.

(*a*) 600 *B.C.* to 350 *B.C.* The rise of Magadha—Persian invasion and rule in the North-West. Tribal Republics—Religious and Philosophical growth—Jainism and Buddhism. Literature—Economic and Social Life—Alexander's invasion.

(*b*) i. 350 *B.C.* to 300 *A.D.*—The Mauryan Empire—its administrative system—The Sungas and Kanvas—The Satavahanas—Kharavela—Language and scripts. Literature and Inscriptions—Art and Architecture—Economic conditions.

ii. *Foreign contacts.*—Indo-Greek Kingdoms—The Sakas—The Pallavas and the Kushans—The Kshatrapas—Coins—Gandhara Art—Mahayana Buddhism—Other religions—Vaishnavism and Saivism.

iii. *South India.*—Early Tamil Literature of the Sangam—Political, Social and Religious conditions—Classical writers—Roman trade—Colonisation of the Malay Archipelago and Indo-Chinese Peninsula.

(c) 300 *A.D. to* 650 *A.D.* (i) *Northern India*—The Guptas—Harshavardhana—History of Sanskrit Language and Literature—The religious, economic and social conditions—Foreign travellers—Art and Architecture.

ii. *Deccan and South India.*—Political condition of the Deccan in this period—The early Pallavas—Revival of Hinduism in the South.

II. (*a*) 650 A.D. to 1200 A.D.

Northern India.—The Rajputs—The Pratiharas of Kanauj—The Chandelas of Bundelkhand—The Paramaras of Malwa—The Palas and Senas of Bengal.

The part played by Nepal, Kashmir and Assam in the diffusion of Indian culture.

Rise and expansion of Islam—Muslim rule in Sindh—Ghazni and Ghor—The Musilm conquest of Northern India.

Deccan.—The Chalukyas of Badami—The Rashtrakutas—The Chalukyas of Kalyani and Vengi—Kannada and Telugu Literature and Culture—Religion—Art.

South India.—The Great Pallavas and Pandyas—The Imperial Cholas—Government—Religion, Art, Literature—Tamil expansion.

(*b*) 1200 A.D. to 1500 A.D.

Northern India.—The Sultanate of Delhi—The four dynasties—The administrative system—The Hindu and Muhammadan contact—Religious reformers—Art, Architecture, Language and Literature.

Deccan and South India.—(i) 1200 A.D. to 1335 A.D. Yadavas of Devagiri, Kakatiyas of Warrangal—The Hoysalas of Dwarasamudra—Hoysala Art—The later Cholas and Pandyas—The Muhammadan conquest.

(ii) 1335 A.D. to 1600 A.D. (1) The Bhamani Kingdom, Government, Society. (2) The Vijayanagar Kingdom to the accession of Krishna Raya—Relations with Islamic States—Literature and Religion.

III. *The Modern Period.*—

i. *Moghul India* (*a*) The Moghuls—Northern India on the eve of the Moghul conquest (Social, Economic, Religious and Political conditions), Babar, Humayun, Sher Shah—His administration—Return of the Moghul.

The Moghul Empire from Akbar to Aurangazeb—The Moghul administrative system—The organisation of the army—The Social, Economic and Religious conditions—Foreign travellers—Architecture, Painting, Music and the growth of Literature, Hindi and Persian.

(*b*) *Deccan.*—

(1) The Deccan Sultanates.

(2) Later Vijayanagar and the Naik Kingdoms of Madura and Tanjore. Mysore.

(*c*) The advent of the European nations and their settlements—The Portuguese power—The Dutch, English and French rivalry.

(*d*) The rise of the Sikhs—Sikhism as a religious and political system—The rise of the Mahrattas—Sivaji—Mahratta Empire 1680—1761.

ii. *The East India Company,* 1600 *A.D. to* 1858 *A.D.*—The growth of the British Dominion in India—The French and the English rivalry in India—The establishment of the supremacy of the English in South India.

The British occupation of Bengal—The growth of British power from Warren Hastings to Lord Dalhousie (Mysore and Mahratta wars).

Internal History.—Administrative and Social Reforms—Land Revenue Policy—The Political, Social and Economic conditions of India on the eve of the Indian Mutiny. The causes and the effects.

iii. *India under the Crown from* 1858 *A.D.*—Foreign policy—Influence of European politics on the British Indian administration—N. W. Frontier Policy—British Commercial expansion —Conquest of Burma.

Internal History.—The administrative policy of the Crown. Its growth—Political, Social and Economic conditions of India in the 19th Century—Impact of Western Education and Thought on Indian life—Birth of Indian Nationalism—The administration of the Indian States and their relations with the paramount power.

Growth of representative institutions—Effects of the war—Constitutional Reforms of 1919.

Text-Books.

V. A. Smith—Oxford History of India.

Moreland and Chatterji—Short History of India.

For consultation only.

Coomaraswami—Indian and Indonesian Art.

Elphinstone—History of India.

Roberts—Historical Geography of the British Dominions—Parts I and II.

Garret and Edwards—Muhammadan India.

Ilbert—Government of India.

The Cambridge Shorter History of India by Dodwell and others.

R. Sathyanatha Ayyar : A College Text-book of Indian History, Parts I, II and III (Rockhouse and Sons, Ltd., Madras).

ENGLISH CONSTITUTIONAL HISTORY FROM 1485.

**Syllabus.*

[COMMON TO GROUPS (iii-b), (iv-a) AND (iv-b).]

I. Introductory—Brief sketch of the position and powers of the King, the Council and the Parliament at the end of the 15th century.

II. The Tudor dynasty—claims of Henry VII to the throne—measures to strengthen the monarchy.

Henry VIII—Relations with Parliament—The English Reformation—its political nature and constitutional results—Progress of the Reformation under Edward VI and Mary.

The Elizabethan Church settlement, its importance, progress of the constitution under the Tudors—Tudor age, an age of Government by Councils.

The importance of the Privy Council in the 16th century.

Tudor local administration—The Justices of the Peace—Position of England at home and abroad at the close of the period.

III. The 17th century—Crown *versus* Parliament; prerogative, law, religion, domestic policy, foreign policy—blending of issues throughout the period—Relations between the Parliament and the first two Stuarts—The Petition of Right—Personal rule of Charles—The work of the Long Parliament.

England under a written constitution—The constitutional experiments of the Commonwealth—Lessons of the Commonwealth—Restoration, how inevitable.

The Restoration—really a revolution—Progress of Parliament during the period. Exclusion Bill, beginnings of parties. The Royalist restoration towards the close of the reign of Charles.

The period of the second Stuart absolutism—1685-1688.

Circumstances leading to the revolution—The peculiar nature of the revolution of 1688, comparison with the events of 1642. Work of the Revolution Parliament—Importance of the reign of William III and Mary—Influence of the continental affairs on English politics during the period—Act of Settlement—Settlement of the fundamental question of sovereignty.

Progress of the constitution under the first two Georges—The Government of the Whig oligarchy—Development of the Cabinet—George III and the constitution—Efforts to arrest constitutional growth—How far successful—Break-up of the Whig oligarchy—Dunning's resolution.

*Three questions will be set on the portion covered by Section I. of which one question will be compulsory, and seven questions will be set on the rest of the subject, of which four will be compulsory.

The Crown—The Cabinet System in the reign of George IV, William IV and Victoria—Gradual substitution of 'influence for power'. Movement towards Parliamentary reform—18th century movement and 19th century movement, contrast.

Reform Bills of 1832, 1867 and 1884, Representation of the Peoples Act of 1918—Act of 1926—position and problems of the Franchise at the present day.

Reorganisation of the Judiciary and local self-government in the 19th century, Reform of municipal corporations—Relations between the House of Commons and the House of Lords in the period.

Parliament Act of 1911—Its main provisions—Importance—Nationalisation of Royal revenues, civil list of the Crown, consolidated fund—History of the growth of the National Army—The permanent civil service in relation to Parliament.

Development of public rights—e.g., right to fair trial, right of association, right of meeting, right to free speech.

Books recommended—

(1) For Section I—Masterman: English Constitutional History.

(2) For the rest:

Taswell-Langmead: English Constitutional History.
Marriott: English Political Institutions.
Maitland: A Constitutional History of England.

For Consultation—

Dicey: Law of the Constitution.

Ramsay Muir: How Britain is governed.

EUROPEAN HISTORY FROM 1500 A.D.

**Syllabus.*

[COMMON TO GROUPS (iii-b), (iv-a), (iv-b) AND (iv-c).]

I. Introduction—Brief account of the part played in European History by Islam, Feudalism, Empire, the Church and Eastern Empire—Europe at the close of the Middle Ages.

II. Advent of the Turks into Europe—Renaissance—Maritime discoveries—exploration and colonisation—decline of Venice and the Hanseatic League—Transfer of power to the Atlantic states—Rise of the national monarchies—France—England—Spain—France under Louis XI—The Christian Conquest of Spain—work of Ferdinand and Isabella—Reformation.

*Three questions will be set on the portion covered by Section I. of which one question will be compulsory, and seven questions will be set on the rest of the subject, of which four will be compulsory.

III. French invasion of Italy—Spain under the Hapsburgs—Charles V—France—Spanish rivalry—Charles V andGermany—Religious Questions—Philip II—The Spanish and the Austrian line of Hapsburgs—Philip's work in Spain—Battle of Lepanto—The Counter Reformation—Relations with the Netherlands—Recognition of Dutch independence—Philip II and France—Philip II and England—Decline of Spain.

The beginnings of Colonial rivalries among the maritime powers.

Close of religious wars in France—Hegemony of France in the European state system—France under Henry IV—Richelieu and Mazarin—The Thirty Years' War—Treaties of Westphalia and Pyrenees—Louis XIV and Colbert—The foreign policy of Louis XIV —War of the Spanish Succession—Treaty of Utrecht—Rise and Decline of Sweden—Gustavus Adolphus and Charles XII—The struggle for the Baltic—Battle of Pultawa and the treaty of Nystadt—Peter the Great and rise of Russia—Turkish advance into Europe and siege of Vienna—Eastern policy of Russia—Effects on Turkey—The treaties of Kutchuk-Kainardji, and Karlowitz—Causes of Turkish decline.

Rise of Prussia—work of the GreatElector of Brandenburg—CharlesVI of Austria and the "Pragmatic Sanction"—The Diplomatic Revolution—The Seven Years' War—The triumph of Prussia and England.

IV. The age of the Enlightened Despots—Prussia, Russia, and Austria—Frederic the Great, Catherine II, Joseph II—The Partitions of Poland.

V. France under Louis XV and Louis XVI—*The Ancient Regime*—The French Revolution—its effects—The Revolutionary wars—Rise of Napoleon—His work and conquests—Downfall of Napoleon—Congress of Vienna.

VI. The Holy Alliance, 1815-1830—Influence of Metternich—The Liberal movements in France and Europe—The War of Greek Independence—Battle of Navarino.

The Era of Revolutions, 1830-1848—Fall of Metternich—The Second Empire in France—National movements—Italian and German Unification—Bismarck and the German Empire—Overthrow of Austria—Franco-Prussian War—The Third French Republic.

VII. The Eastern Question—Russo-Turkish relations—The Crimean War—Rise of the Balkan States—Treaty of Berlin, 1878.

Modifications of the Berlin Settlement—Plans for the reform of Turkey—Abdul Hamid II—His reactionary policy and its results—Incorporation of Eastern Roumelia with Bulgaria, 1885—Creation of the Bulgarian Kingdom, 1908—Annexation of Bosnia and Herzegovina by Austria-Hungary, 1908—Loss of Crete and Egypt—The Balkan Wars, 1912-1913—The Treaty of London, 1913.

The German Empire, 1870-1914—German culture—Predominance of Germany in Europe—Rivalry with France, Russia and England—Triple Alliance—Dual Alliance—The Triple Entente—Russia and the

Slav States—Growth of German influence in Turkey—Austria under Francis Joseph—Serajevo—The Treaties of Versailles and Lausanne.

Books recommended for Section I of the syllabus—

Emerton : Introduction to the Study of Middle Ages.

Gordon : A Junior History of Europe.

For the rest of the syllabus—

Grant : A History of Europe, Parts III & IV.

For consultation—

Slisson : 20th Century Europe.
Plunkett and Mowat : A History of Europe.
Grant & Temperley : Europe in the 19th and 20th Centuries.

ECONOMICS—GENERAL.

Syllabus.

[COMMON TO GROUPS (iv-a), (iv-b), (iv-c) AND (iv-d).]

N.B.—Students are expected to study economic principles in their application to Indian facts and problems.

Introductory :—Nature and scope of Economics. Economics as a social science. Economic laws. Methods of Economic Science. Definition of the principal economic terms.

Consumption :—Wants of man, their nature and classification. Diminishing utility and elasticity of wants. Consumer's Surplus, Standard of life. Family budgets.

Economic Organisation:—The general structure and evolution of modern industry and trade. Bases of modern economic life : Private property, freedom of contract; Competition and monopoly.

Production :—Nature of production. Agents of production. Their changing importance. Land and other natural agents. Labour and causes affecting its efficiency. The quantity and quality of population. Division of Labour and the use of machinery. Capital—its nature and function. Enterprise. Risk-bearing, speculation and insurance.

Laws of production—Increasing, diminishing and constant cost. Law of substitution. Large scale production. Localisation of industry. Types of productive organisation : partnership, joint stock companies, co-operative organisation, state enterprise. Industrial combinations. Rationalisation.

Value and Exchange:—Evolution of the market. Value, its meaning. Theories of value. Analysis of Supply and Demand. Cost of production. Joint supply and joint demand. Equilibrium of Demand and Supply. Value during long and short periods. Value and Price. Prices under free competiton. Theory of monopoly prices. Speculation and its effects on prices.

Mechanism of Exchange:--Money. Evolution and Functions of Money. Qualities of good money. The Quantity Theory of Money. Systems of money. The Gold Standard and its variants. Bimetallism. Gresham's Law, History of Indian Currency. Credit, its meaning and forms. Instruments of credit. Credit and prices. Paper money. Convertibility and inconvertibility. Indian paper currency. Banking. Functions of banks, Types of banks. Central Banks, Variations in the value of money and their effects.

International Trade:—The basis of international exchange. Free Trade and Protection. Tariffs and bounties. Balance of trade. Foreign Exchanges. The Rupee exchange.

Distribution:—General theory of distribution. The nature and theory of rent, interest, profits and wages, and the causes of their variation. The National Income and its distribution. Problems of distribution; inequality of incomes, socialism, trade unionism.

Public Finance :—The economic functions of the State. Public expenditure and sources of public revenue. General principles of taxation; direct and indirect taxes. Public debts.

Books recommended—

1. Marshall: Economics of Industry.
2. Clay: Economics for the General Reader.
3. R. D. Richards: Groundwork of Economics, 2nd Edn. (University Tutorial Press).
4. Jathar and Beri: Introduction to Economics.
5. Birnie: Economics in Outline, (Nelson).

Books for reference—

Briggs and Jordan: Text-books of Economics.

Dearle: Economics.

POLITICS.

Syllabus.

[COMMON TO GROUPS (iii-b), (iv-a), (iv-b) AND (iv-d).]

Part A: Theory of the State.

Part B: The Evolution of the State.

Part C: The Organisation of Government.

PART A.

1. The State—Its characteristics—Nation, society and government.

II. The origin of the State—Deductive and Inductive theories—Patriarchal and Matriarchal Theories—The Social Contract theory—The organic theory of the State.

III. The end of the State—Authority and obedience in the State—State sovereignty—Views of Hobbes, Locke, Rousseau, Austin and Dicey—Pluralism—Theories of Rights—Law and Liberty—The Totalitarian theory.

IV. The sphere of the State—Laisses Faire; Conservatism, Liberalism, Socialism, Collectivism, and Communism—Private Property and State-rights—Social justice.

PART B.

V. Evolution of primitive political society—Effects of war and conquest—Slavery, adoption and amalgamation—Tribes and clans. Illustrations: Greece, Rome and Anglo-Saxon England.

VI. The City-state—Circumstances of its origin—Organisation and political evolution—Decay of the City-state.

VII. Feudalism.

VIII. The Country-state or the Nation-state.

IX. The Empire-state—The Federal state.

X. The British Commonwealth of Nations—The League of Nations—Nationalism and Internationalism.

PART C.

XI. Forms of Government—Monarchy, aristocracy, oligarchy, democracy and dictatorship.

Constitutions—Written and unwritten—Rigid and flexible—Conventions—Fundamental rights—Amendments.

XII. Ancient and modern democracies—Mediaeval representative institutions.

XIII. The theory of the separation of powers—Montesquieu—Limitations of the theory.

XIV. Executives in modern states—Parliamentary, Presidential, Collegiate, Dictatorial.

XV. Legislatures—Functions—Bicameralism—Composition and distribution of powers—Deadlocks—Referendum, recall, initiative, plebiscite—Minority and proportional representation—The committee system—Parties.

XVI. The Judiciary—Its importance in unitary and federal states. The Rule of Law and administrative law—The supreme court of the U. S. A.

XVII. The Civil Service in the modern state.

XVIII. The Indian constitution—Acts of 1909, 1919 and 1935—The control of Parliament—The India Office—Secretary of State and his advisers—Central and provincial executives and legislatures—Electorates. The Federal Court and the Privy Council—Local Self-Government—(Indian States)—Rule of Law in India.

Part C of the syllabus will be illustrated with reference to the constitutions of France, Germany, Switzerland, U.S.A., England and self-governing Dominions.

Books recommended for study—

Leacock, S. : Elements of Political Science.

Jenks, E. : The State and the Nation.

Asirvatham, E. : Political Theory, Chapters II to VII, IX to XI, XIV and XV.

Mazumdar : Political Science and Government (latest edition, relevant chapters).

Joshi. G. H. : The New Indian Constitution.

Sidgwick : Development of European Polity (Chapter on Mediaeval Representative Institutions).

Gettell : Political Science (1933).

Appadorai, A. : The Substance of Politics.

GROUP (iv-b)—ECONOMICS AND HISTORY.

(1) SYLLABUS IN ECONOMICS—GENERAL.

The same as for Group (iv-a).

(2) ECONOMICS (SPECIAL PAPER).

Part I—Rural Economics.

Scope.—A study of the organization and financing of agriculture, and in general, all activities connected with rural uplift, with special reference to India. To include in particular, co-operative systems and methods, marketing, land tenures and all kinds of State activity for agricultural improvement.

Books Recommended.—

1. Carver : Principles of Rural Economics.
2. Keatinge : Agricultural Progress in Western India.
3. Matthai : Agricultural Co-operation.
4. Abridged Report of the Royal Commission on Agriculture, 1928.
5. Dr. B. V. Narayanaswami Naidu and Mr. Narasimhan: Economics of Indian Agriculture.

Part II—Public Finance.

Scope.—The raising and spending of revenues, its theory and practice including also public debt. financial administration and the economic functions of Government. The whole to be illustrated from the recent financial history of India and England.

Books recommended.—

1. Dalton: Public Finance.
2. Armitage-Smith: The Nature and Principles of Taxation.
3. Report of the Indian Taxation Enquiry Committee.

(3) MODERN ECONOMIC HISTORY OF ENGLAND AND INDIA.

A general survey of the agricultural, manufacturing and commercial developments in England and India from 1600, special attention being paid to the period after the Industrial Revolution in England and that after 1850 in India. The following lines of development should specially be kept in view:—The economic policy of the State, changes in agricultural and industrial methods and organization, transport methods and trade developments, changes in the structure and control of business, tariff policies, growth of banks and financial systems, labour movements and social changes.

Books recommended.—

1. Ashley: Economic Organization of England.
2. Gadgil: The Industrial Evolution of India.
3. Knowles: Industrial and Commercial Revolutions in the 19th century.
4. Slater: The Making of Modern England.
5. Imperial Gazetteer, Vol. III.
6. Southgate: English Economic History.

(4) POLITICS.

The same for Group (iv-a)

GROUP (iv-c)—POLITICS AND HISTORY.

POLITICS.

Paper I.

Political Theory with special reference to a classic—

1. The classic will be chosen from the following books:—
   Select Chapters from Aristotle's Politics.
   Rousseau: Social Contract.
   Burke: Reflections on the French Revolution.

2. The paper will consist of ten questions, out of which students will be expected to attempt five questions. There will be three questions on the prescribed text, of which one compulsory question will consist of extracts from the text to be commented on and the remaining seven questions will be on general political theory.

3. The scope of the questions on political theory will be indicated by the following books :—

Gettell: Political Science.
Ruthnaswami: The Making of the State.
Pollock: History of the Science of Politics.
Lord: Principles of Politics.
Delisle Burns: Political Ideals.
E. Asirvatham: Political Theory (second edition).

Paper II.

The scope of the questions in Political Organization will be indicated by the following books :—

Jenks: State and Nation.
Munro: Governments of Europe (1938 edition).
Joshi: The New Constitution of India.
Allport: Kingdoms in Partnership.
Harris: Local Government in many Lands.
Brogan: The American Political System.
Bryce: International Relations.
Finer: The British Civil Service.
Government of India Act—1935.

Students will be expected to show a detailed knowledge of the constitutions of India, Great Britain, the British Commonwealth, U.S.A., Switzerland, France, Germany, Italy, Russia and Japan.

Syllabus for the Papers on Politics.

N.B.—These syllabuses are intended to be suggestive and not exhaustive. References to detailed topics have been omitted. The syllabuses are meant as a general guide to teachers and question paper-setters.

Paper I.

Political Theory—

The State—definition and description. Characteristics.

Origin of the State—Various theories.

Evolution of the State—the Family—the Clan—the Tribe—the City-State—the Nation-State—Empire—Federalism.

Factors of the State—Land—People (Family groups, the Nation)—Government—Law and Custom.

The need of the State—the State as natural and necessary—various theories.

The State and the citizen—rights and duties—obedience and authority—liberty and equality—the sphere of the State.

Sovereignty—democracy and dictatorship—totalitarianism—the State as a superhuman entity.

Paper II.

Political Organization.—

Organization of the State and machinery of Government—Executive—judiciary—legislature—the electorate—parties—civil service—local government—departments of government—as illustrated by the Governments of India, Great Britain and the British Commonwealth, U.S.A., Switzerland, France, Italy, Russia and Japan.

Government in totalitarian states.

The Society of Nations—international law and international relations.

Classic for Study.

1949 and 1950.

Burke: Reflections on the French Revolution.

GROUP (iv-d)—ISLAMIC HISTORY AND CULTURE.

Books recommended for study—

(1) GENERAL HISTORY OF ISLAM—

Amir Ali: A Short History of the Saracens.

Muir: The Caliphate; Its Rise, Decline and Fall.

(2) CIVILIZATION AND CULTURE OF ISLAM:—

Amir Ali: The Spirit of Islam.

Arnold: The Legacy of Islam.

Hell: The Arab Civilisation.

(3) HISTORY OF INDIA WITH REFERENCE TO THE ROLE OF ISLAM:—

Dodwell: The Cambridge Shorter History of India.

Elphinstone: History of India.

(4) POLITICS—The same as for Group (iv-a).

(5) ECONOMICS—The same as for Group (iv-a).

GROUP (v)—LANGUAGES OTHER THAN ENGLISH.

(1) SANSKRIT.

(a) Selected Language.

Sanskrit Language and Literature. The course shall be:—

(a) Selections from the Early Period, including Vedic Mantras, Brāhmaṇas, Āraṇyakas and Upaniṣads and the Sutra literature.

(b) Selections in prose and verse from the Later Period, including the Dharmasastras, and the Itihāsa, Kāvya and Nātaka literature.

A knowledge of Alamkāra-Sāstra will be required sufficient for the correct understanding of native commentators.

(c) Sanskrit Grammar treated historically and comparatively in accordance with a syllabus.

(d) Translation from and into Sanskrit.

(e) General History of Sanskrit Literature.

(f) Early Indian History.

In the examination there shall be two papers, each of three hours' duration in subject (b) and one paper of three hours' duration in each of the other subjects, except Translation which will form part of the papers set on (a) and (b) above.

(b) *Related Language.*

The course shall consist of the study of one drama of the classical period and portions of one Kāvya. In the examination there shall be one paper of three hours' duration which shall include pieces for translation from Sanskrit into the main language.

SYLLABUS FOR SANSKRIT GRAMMAR FOR GROUP (V)—LANGUAGES OTHER THAN ENGLISH.

The syllabus for Sanskrit Grammar treated historically and comparatively shall be as follows:—

Syllabus for Indo-European Philology with special reference to Sanskrit.

N.B.—Knowledge, accurate, so for as it goes, but neither extensive nor minutely detailed is expected under each head.

P.I.E. = Primitive Indo-European; Ind. Ir. = Indo-Iranian Skt .= Sanskrit; Gk. = Greek; Lat. = Latin, Teut. = Teutonic.

A. GENERAL.

I. *Elementary Phonetics.*—(a) The organs of speech-production and classification of speech-sounds. Quantity; accent—sentence, word, and syllable accent. Glides.

(b) Phonetic description of all speech-sounds treated in the course. Phonetic transcription.

(c) Sound-change; isolative, conditional; defective imitation and the result of analogy. Meaning of the term 'Law' in Linguistic Science. Dialectal separation. Growth of 'literary languages,' Families of languages. Cognate words and loan words.

II. *The Indo-European Family of Languages.*—The original speech and its earliest dialectal divisions. Branches and sub-branches of the Indo-European Family. Some distinguishing characteristics of the Indo-Iranian, Hellenic, Italic, and Teutonic branches.

III. *Indo-Iranian.*—The Indian Sub-Branch. Dialects of Vedic times. Epic dialects. Classical Sanskrit. Middle Indian Speeches. New Indian Speeches.

B. PHONOLOGY.

IV. *The P. I. E. vowel system.*—The oldest conditions: primary vowels: changes resultant on accent: secondary vowels and syllabic liquids and nasals. Vowel-gradation, quantitative and qualitative: its relation to accent and its bearing on morphology. The later P. I. E. vowel-system prior to the period of languages—separation. General treatment of the P.I.E. vowel-system in the oldest Ind.-Ir., Gk., Lat., and Teut.

V. The vowel-system of Skt. in its relation to P.I.E. and to the vowel-systems mentioned in IV. Vowel-gradation in Skt.

VI. *The P. I. E. Consonant system.*—Classification of the P.I.E. consonants. Earliest dialectal variations: the 'centum' and 'Satam' divisions. Treatment of the P.I.E. consonant generally in Ind-Ir., Gk., Lat., and Teut.

VII. Representation of the P.I.E. consonant-system in Skt. Liquids and Nasals. Plosive consonants. Cerebral consonants (Fortunatov's Law). Palatal and velar consonants. (The law of palatalization). The law of aspirates (Grassmann's Law). Spirants, Semi-vowels.

VIII. Sandhi, external and internal. Glides in Skt. Anaptyxis (Svarabhakti). Haplology.

C. ACCIDENCE.

IX. Word-formation. Base, stem and suffix. Prefix-Infix.

X. Skt. compounds, nominal and verbal.

XI. Skt. suffixes, primary (krt) and secondary (taddhita).

XII. *Nominal Declension.*—P.I.E. conditions. Number. Grammatical Gender. Case and case-endings. P.I.E. case-endings. Syncretism. Contamination. Classification of noun declensions according to suffix. Vowel and consonant-stems.

XIII. *The noun declensions in Skt.*—treated historically and comparatively with reference to P.I.E., Gk., Lat., and Teut. Philological explanation of all case-endings. Comparison of adjectives and formation of adverbs treated philologically.

XIV. Numerals—Philological treatment of the Skt. numerals.

XV. *Pronouns and pronominal adjectives.*—The Skt. pronouns and pronominal adjectives treated philologically with reference to P.I.E., Gk., Lat., and Teut.

XVI. *The Verb*—The P.I.E. verbal-system generally treated; voice, mood, tense, augment, reduplication, personal endings. Thematic and Athematic stems. Types of verbal action.

XVII. The Skt. verb in its relation to the P.I.E. verbal system. Present, perfect, aorist and future systems in Skt. Transfer from the athematic to the thematic class. Periphrastic formations. Analogy in the Skt. verbal-system. Derivative verbs—causative, denominative, desiderative, intensive.

XVIII. Voices, moods and tenses in Skt. Infinitive verbal formations.

(2) TAMIL, TELUGU, KANNADA OR MALAYALAM.

The course shall be:—

(*a*) The study of selections representative of the several periods of the literature of the selected language including inscriptions.

(*b*) The history of the Language and Literature with special reference to the selected books.

(*c*) The elements of the Grammar of the language including those of the Prosody and Rhetoric of the language.

(*d*) The elements of the Comparative Grammar of the Dravidian Languages.

(*e*) Composition generally on literary and historical subjects relating to the language chosen.

(*f*) Early South Indian History (or Language).

(*a*) SYLLABUS FOR THE COMPARATIVE GRAMMAR OF THE DRAVIDIAN LANGUAGES FOR GROUP (v).

1. *Introduction.*—First Principles. The material of Language. Sounds in Evolution. Interaction of Form and Function. Meaning and change of Meaning. Writing. Linguistic Geography. Culture and Language. Language and thought.

2. *Dravidian Languages.*—The Dravidian group of languages and their chief characteristics. Reasons for choosing the word "Dravidian" as the name of this group. Enumeration of Dravidian languages. Meaning of the name "Tamil", "Telugu", "Kannada", and "Malayalam". Where they are spoken.

3. *Dravidian Languages (continued).*—Relation between Dravidian Languages and Sanskrit. Dravidian element in the North Indian Vernaculars. Affiliation of Dravidian Languages. Tamil, the earliest of the cultivated languages.

4. *Dravidian alphabet.*—Their history. Differences among existing alphabets. Their adequacy and inadequacy.

5. *Dravidian phonology.*—The primitive Dravidian parent language—

(i) Vowel-system—Changes. Accent. Harmonic sequence of vowels.

(ii) System of consonants—Origin of cerebrals. Dialectic interchange of consonants. Euphonic permutation of consonants. Sandhi. Nasalisation. Anusvara and Ardhanusvara. Prevention of hiatus.

(iii) Dravidian syllabation.

6. *Accidence*—

(i) THE NOUN.

(*a*) Gender—Dravidian nouns divided into two classes denoting rational being and irrational things. Comparison between Dravidian languages and Sanskrit.

(*b*) Number—Singular and Plural. No dual. Singular. Masculine, feminine and neuter. Plural—principles of pluralisation.

(*c*) Case—Principles of case-formation. Dravidian cases. Comparison with Sanskrit cases.

(ii) THE ADJECTIVES.

Formation of Adjectives from substantives, relative participles of verbs and past verbal participles.

(iii) THE NUMERALS.

Defferent views about their origin. The numeral adjective. The cardinal and the ordinals.

(iv) THE PRONOUN.

Light thrown by Pronouns on relationship of languages. Persistence of personal pronouns. Pronouns of the first and the second person. Comparison of dialects. The reflexive pronoun. Pluralisation of the personal and reflexive pronouns. Demonstrative and interrogative pronouns. Their bases. Demonstrative and interrogative adjectives and adverbs. Honorific demonstrative pronouns.

(v) THE VERBS.

Structure of the Dravidian Verb, Roots used either as verbs or nouns. Formative particles often added to roots. Classification of Verbs.

(*a*) Causal verb—their formation.

(*b*) Frequentative Verbs.

(*c*) Conjugational system—Formation of the tenses.

Their significance and force. The present tense.

The preterite tense. The future tense. The verbal and relative participle.

(*d*) Formation of Moods—Methods of forming the conditional, the imperative and the infinitive.

(*e*) The Voice—Active and Passive—The Negative Voice. Combination of negative particles with verbal thmees. The Dravidian negative particle.

(*f*) Formation of verbal nouns, derivative nouns and abstract nouns.

(vi) THE ADVERBS.

7. *Vocabulary*—

(1) Borrowing and its causes—social, commercial, political and religious. Borrowings from Sanskrit, borrowings from other languages.

(2) Structure and form—The essentials for the individuality of a language. Vocabulary cannot change the character of a language. Hybrids. Gain and loss from mixed character of a language.

8. *Comparative syntax*—The syntax of the several languages compared. Differences and similarities. The extent of sanskrit influence over the syntax of the several languages.

(*b*) SYLLABUS FOR THE HISTORY OF THE TAMIL LANGUAGE.

[GROUP (v).]

1. *General.*—"Tamil", its meaning and origin. The place of Tamil in the Dravidian family of languages. Its high antiquity. Its geographical area in ancient times. The Sentamil and Koduntamil countries. Very early cultivation of Tamil. The three Sangams.

II. *The periods of Tamil language.*—(i) The Old or Sangam Tamil; (ii) The Mediaeval Tamil; and (iii) The Modern Tamil. Illustrative Literature of each period. Grammars of the different periods. The extent of Sanskrit influence on Tamil Grammars. Difference between the languages of the three periods in point of vocabulary and grammar.

III. *Language and dialect.*—The standard of literary language and the spoken language, their relation and mutual influence. Sentamil and Kodun Tamil. Dialects, Causes. Local and Social peculiarities. Evidences in ancient works. Classificatian of Tamil into Iyal, Isai, and Natakam.

IV. *The alphabet*—The Script. Its gradual development; Vatteluttu—the Grantha Tamil characters, their geographical distribution. Origin and history. Their relation to Brahmi. The form of Tamil characters in Tolkappiyam, etc. Gradual change in script. Phonemes and Script.

V. *Phonology.*—*Vowels.*—Their relationship to the primitive Dravidian vowel system. Classification. Diphthongs. Accent and emphasis—rising, falling and vanishing accents. Influence of accent

on word change and in prosody. Alapedai. Mutation of vowels. Vowel harmony. Vowel Sandhi. Glides.

Consonants.—Their relation to the primitive Dravidian consonants. Classification. History of consonants. Mutation of consonants, palatalisation, dentalisation, voicing, unvoicing, consonant length, assimilation. Alapedai. Consonantal Sandhi.

Laws of Tamil syllabation.—Difference between Tolkappiyam and Nannul. Light on the nature of loan words.

VI. *Accidence*—

(1) *Nouns.—Gender and Number*—Interdependent classification. Prefixes and suffixes. The epicene, neuter and double plurals. Historical treatment in old and modern Tamil.

Case.—Number of cases. Sanskrit influence. Formation of oblique case. Inflexional Base. Increments or augments and suffixes. The uses of the various cases. Historical treatment of cases.

(2) *Pronouns.*—The three persons and their forms in old and modern Tamil. Oblique forms. The reflexive pronouns. The demonstrative and interrogative bases (old and modern). Honorific pronouns.

(3) *The verbs.*—Structure of verbs—the base, the tense infix and the personal suffix. Classification of verbs. The causals. The appellative verbs.

The Passive Voice. History of padu.

The moods.—Imperative, Infinitive, Subjunctive.

The tenses.—The tense-formation. The tense infixes—the principles of their use. Negative particle.

The relative and verbal participles.

(4) *The Adjectives and adverbs.*—The Uriccol. The adjectival and adverbial participles. The numerals. The cardinals and the ordinals, and the multiplicatives. Their principles of formation. The double form. Their uses.

The particles. (Idai-c-col).—Origin and their significance. Interjective. Conjunctive particles.

VII. *Vocabulary*—The general character of Tamil vocabulary at different periods. Borrowing. Its causes. Periods of borrowing, character and comparative extent of borrowing at each period.

Doublets. Telugu and Kannada elements in Tamil.
Loss of old words. Nature and extent.
Sanskrit words. Tatsamas. Tadbhavas (rules regarding these).
Prakrita borrowings. Manipravala style. Other borrowings.
Hindi, Portuguese, English, etc.
Hybrids. Tests for distinguishing loan words.

VIII. *Word-building*—

(i) By composition. Compound words (Tokai, Ummai, Uvamai. etc).

(ii) By derivation.

(iii) By root creation—back formation—double bases, etc.

IX. *Semantics*.—Changes in the meaning of words. Elevation, degradation, specialisation and generalisation.

X. *Syntax*.—Order of words in a sentence. Deviation from normal—cause. Difference between the syntax of poetry and prose. Sanskritic construction in Tamil.

(c) SYLLABUS FOR THE HISTORY OF THE TELUGU LANGUAGE.

[GROUP (v).]

I. *General*—The origin and meaning of the word, 'Telugu.' The place of Telugu in the Dravidian family of languages. Its antiquity and its geographical distribution. Period of its early cultivation as inferred from the inscriptions. The extent of Sanskrit influence over Telugu Grammar.

II. *Periods of Telugu Language*—The pre-Nannayya period, the Nannayya period, and the post-Nannayya period. Illustrative literature of each period. Grammar of each period. Difference between languages of different periods in point of vocabulary and grammar.

III. *Language and Dialect*—The standard of literary language and the spoken language. Their relation and mutual influence. Dialects. How formed? Different localities and different classes of people in the same locality have different dialects. Are dialects discernible in ancient literary works?

IV. *Telugu Alphabet*—

(a) *The Script*.—Its gradual devolopment. The Telugu-Kannada form and its relation to Brahmi, Vengi and Chalukya scripts.

(b) *The sound-values*—How far the alphabet is phonetic. Its pronunciation. The spoken sounds and the written symbols.

V. *Phonology*.—Vowels and their relation to the primitive Dravidian vowel-system. Classification, of vowels according to the place of production. Diphthongs. Accent and emphasis. Accent determining change. Mutation of vowels. Vowel harmony, vowel sandhi.

VI. *Phonology* (continued)—Consonants and their relation to the primitive Dravidian consonants. Classification of Telugu consonants according to the place of production. Consonantal diphthongs Mutation of consonants. Assimilation of consonants and consonant

sandhi. Other changes in consonants. Palatalisation, Dentalisation, Voicing, Unvoicing, Compensatory lengthening, etc. The theory of ardhanusvara and the eacuminal 'r', dialectic interchange of consonants. Telugu syllabation.

VII. *Accidence.*—Nouns. Gender. Nouns denoting *mahat* and *amahat.* Number. No dual. Principles of pluralisation. Different treatment of *tatsama* and *achchika* words with regard to the formation of number and gender. Case and Case-endings. Principles of case formation. Aupavibhaktikas.

VIII. *Accidence* (continued).—Adjectives. Classification of adjectives. Their agreement with substantives. Formation of adjectives from substantives. Comparison of adjectives.

IX. *Accidence* (continued).—Numerals. Ordinals and cardinals. Declension of numerals.

X. *Accidence* (continued).—Pronouns. Classification of pronouns. Declension of pronouns. History of the Telugu pronouns. Demonstrative and interrogative adjectives. Demonstrative and interrogative adverbs. Honorific demonstrative pronouns.

XI. *Accidence* (continued.)—The verb. Structure of the verb. Causal verbs. Atmanepada verbs. Voice: active and passive. Tenses: present, past and future. Moods: conditional, imperative infinitive and negative. Formation of verbal participles, verbal nouns, derivative nouns, and abstract nouns.

XII. *Accidence* (continued).— Adverbs. No real adverbs in Telugu.

XIII. *Vocabulary.*—General character of the Telugu vocabulary. The native element. The so-called achcha Telugu. Borrowing and its causes. Formation of compounds Coining doublets. Dravidian basic element. Tamil and Kannada element. Causes of admixture. Various periods of entry of Tamil and Kannada words into Telugu.

XIV. *Vocabulary* (continued).—*Tatsama* words: *Samskritasama* and *Prakritasama.* Laws of formation. Period of extensive Prakrit borrowing. *Tadbhava* words. *Samskritabhava* and *Prakritabhava.* Laws of formation. Other borrowings. Hindustani, Marathi, Oriya, English, French, etc.

XV. *Word-Building.*— (1) By composition. (2) By derivation. The various suffixes used to form nouns, verbs, adjectives and adverbs, etc. (3) Root-creation.

XVI. *Semantics.*—Changes in meaning and usage. Elevation and degradation. Specialisation and generalisation of native and foreign words. Obsolete words.

XVII. *Syntax.*—Order of words in a sentence. The difference between Prose and Poetry as regards syntax. Deviations from the normal order of words in a sentence and their causes. Sanskritic constructions in Telugu.

(d) SYLLABUS FOR THE HISTORY OF THE KANNADA LANGUAGE.

[GROUP (v).]

I. *General.*—The origin and meaning of the word "Kannada". The place of Kannada in the Dravidian family of languages. Its high antiquity and its geographical distribution. Period of its early cultivation as inferred from the inscriptions. The extent of Sanskrit influence over Kannada Grammar.

II. *The periods of Kannada language.*—(i) Old Kannada, (ii) Mediaeval Kannada, and (iii) Modern Kannada. Different views regarding this division. Illustrative literature of each period. Grammar of each period. Difference between the languages of different periods in point of vocabulary and grammar.

III. *Language and dialect.*—The standard of literary language and the spoken language. Their relation and mutual influence. Dialects. How formed. Different localities and different dialects. Are dialects discernible in ancient literary works?

IV. *Kannada alphabet.*—The script. Its gradual development. The Telugu Kannada form and its relation to Brahmi, Vengi and Chalukya scripts. The sound values—How far the alphabet is phonetic. Its pronunciation. The spoken sounds and the written symbols.

V. *Phonology*—(i) *Vowel system*,—Vowels and their relation to primitive Dravidian vowel system. Classification of vowels according to the place of production, Diphthongs. Accents and emphasis. Accent determining change. Mutation of vowels. Vowel harmony. Vowel-sandhi, glides.

(ii) *Consonants system.*—Consonants and their relation to the primitive Dravidian consonants. Classification of consonants according to the place of production. Consonantal diphthongs. Mutation of consonants. Assimilation of consonants and consonantal sandhis. History of consonantal sounds, doubling of consonants, palatalisation, dentalisation, voicing, unvoicing, compensatory lengthening, nasalisation, denasalisation, etc. Dialectic change of consonants. Theory of Kula and Ksala and the History of r and l.

(iii) *Kannada syllabation.*

VI. *Accidence*—(1) *Nouns*—(*a*) *Gender*,—Are Dravidian nouns naturally neuter? Nine genders according to the Grammarian, Kesiraja, reducible however to three, masculine, feminine and neuter. Gender prefixes and suffixes.

(*b*) *Number.*—Principles of pluralisation. The epicene plural, the neuter plural, double plurals.

(*c*) Case and case-endings in old, mediaeval and modern Kannada. Principles of case formation.

(2) *Adjectives.*—Classification of adjectives. Formation of adjectives. Their agreement with substantives.

(3) *Numerals.*—The cardinals and the ordinals, the multiplicatives, appellative nouns of number in Kannada and the principles of their formation.

(4) *Pronouns.*—Classification of pronouns. Their forms in the dialects of Kannada. Declension of pronouns. History of pronouns. Reflexive, demonstrative, interrogative and honorific pronouns.

(5) *Verbs.*—Structure of the verb. Classification of verbs. The causal verbs. The voice. The tenses. The moods. Formation of verbal participles, verbal nouns, derivative nouns and abstract nouns.

(6) *Adverbs.*—The different modes of their formation and their history.

VII. *Vocabulary.*—General character of the Kannada vocabulary. The native element. Borrowing and its causes. Periods of borrowing, character and comparative extent of borrowing at each period. Doublets, Hindustani, Marathi, English, and Portuguese element. Samasamskrita words. Tatsama words, Tadbhavas. Loss of words.

VIII. *Word-building.*—(i) By composition. (ii) By derivation. The various suffixes used to form nouns, verbs, adjectives and adverbs, etc. (ii) Root-creation.

IX. *Semantics.*—Changes in meaning and usage. Elevation, Degradation, Specialisation and generalisation of native and foreign words.

X. *Syntax.*—Order of words in a sentence. The difference between prose and poetry as regards syntax. Deviation from the normal order of words in a sentence and their causes.

(e) SYLLABUS FOR THE HISTORY OF THE MALAYALAM LANGUAGE.

[GROUP (v).]

I. *General.*—The origin and meaning of the word "Malayalam". The place of Malayalam in the Dravidian family of languages. The theories about the origin of the Malayalam language. Its age and the geographical area whereit has been spoken. Kerala and its peculiar geographical position which brought about the development of Malayalam as a separate language. The beginning of the cultivation of Malayalam as a literary language. Earliest available works, such as Rama Charitam, Daruka Vadham.

II. *The Periods of Malayalam language.*—Ancient, mediaeval and modern characteristics of the language. Lilatilakam and its importance. Illustrative literature of pre-Ezuttacchan, Ezuttacchan and post-Ezuttacchan periods, and difference in point of grammar and vocabulary.

III. *Languages and dialect.*—The standard of literary language and the spoken language. Vamozi and Varamozi. Their relation and

mutual influence. The extent of Tamil and Sanskrit influence on vocabulary and grammar. Dialects: Desya, Gramya. How formed? Different localities and different classes of people in the same locality have different dialects. Are dialects discernible in old literary works?

IV. *The alphabet.*—(*a*) The script. Its development. Ancient Vatteluttu and modern Arya-eluttu, history of the two scripts. Arya-eluttu and consequent introduction of Sanskrit pronunciation. Changes in spelling consequent on the transcription of Vatteluttu into Arya-eluttu. (*b*) The sound-values. How far the alphabet is phonetic; the pronunciation. Difference between ancient and modern pronunciation.

V. *Phonology.*—(*a*) Vowels and their relation to primitive Dravidian vowel systems. Classification. Diphthongs. Semi-vowels. (Samvrtam). (*b*) Consonants: their relation to primitive Dravidian consonants. Classification. History of consonants. Palatalisation, dentalisation, voicing, unvoicing. Consonant-length, assimilation. Principles of Sandhi.

VI. Malayalam syllabation and influence of loan words.

VII. *Accidence.*—Nouns. Gender and number.

Gender.—Masculine, feminine and neuter genders. Gender based on sex unlike that of the classical languages.

Number.—Principles of pluralisation. Suffixes, epicene and honorific plurals.

Gatis.—Their origin and history.

Case.—The number of cases and Sanskrit influence; the formation of the oblique case: inflexional base; cases formed by suffixes and cases formed by agglutination.

Pronouns.—Three. Their forms and history. Oblique forms. Reflexive pronouns. Comparison of Dravidian pronouns.

Verbs.—Structure of verbs—the base, the tense infix and the personal suffix. Classification of verbs. Causals and appellative verbs.

The passive voice.—History of patu.

Tenses.—The tense formation. The tense infixes: the principlels of their use. Negative particle.

The Adjectives and adverbs.—The adjectival and adverbial participles. The numerals. The cardinals and the ordinals, and the multiplicatives. Their principles and formation. The double form. Their uses.

The particles.—Origin and their significance. Interjective. Conjunctive particles.

VIII. *Vocabulary.*—The general character of Malayalam vocabulary at different periods. Borrowing. Its causes. Periods of borrowing. Character and comparative extent of borrowing at each period. Affinities with Tamil and other Dravidian languages. Loss of old

words.—Nature and extent. Sanskrit words: Tatsamas, Tadbhavas (rules regarding these). Prakrita borrowings. Manipravala style, other borrowings. Arabic, Persian, Hindi, Portuguese, English, etc. Hybrids. Tests for distinguishing loan words.

IX. *Word-building*—

(i) By composition. Compound words.

(ii) By derivation.

(iii) By root-creation.

X. *Semantics*.—Changes in the meaning of words. Elevation, degradation, specialisation and generalisation.

XI. *Syntax*.—Order of words in a sentence. Deviation from normal. Cause. Difference between the syntax of poetry and prose. Sanskritic construction in Malayalam.

(3) RELATED SUBJECT: THE DRAVIDIAN LANGUAGES: SYLLABUS FOR EARLY SOUTH INDIAN HISTORY.

[GROUP (v).]

I. *Geographical divisions, etc., of India*.—India, south of the Vindhyas; Mahismati, the recognised point of separation between the north and the south; Dakhan and South India; Kistna the dividing line.

II. *Early inhabitants and their civilization, etc.*—Primitive inhabitants, their civilization and culture; the Aryan expansion southwards; knowledge of South India in Early Indian literature, Sanskrit and Pali; story of Agastya and his disciples; beginnings of Tamil literature.

III. *Cis-Vindhyan India in the Mauryan age*.—The Dakhan and South India in the Mauryan age; extent of Asoka's empire and his relations with South India; the rise of the Andhras; Kharavela and Kalinga; South India and Ceylon.

IV. *The Andhras of the Dakhan*.—The Andhras, their original home; their early history; Andhras in the Puranas; the later Andhras; the extent of the empire and its divisions; religion, literature, etc., under the Andhras; break up of the Andhra empire.

V. *South India in the early centuries of the Christian Era*.—South India at the dawn of the Christian era; political divisions of South India; contact with the outside world; commerce and colonization; Tamil literature of the period and its character.

VI. *The Pallavas and connected dynasties*.—The Pallavas and the Tondaiyar; Tondamandalam and its reclamation; Tondamandalam Tiraiyan of Kanchi; Satavahana expansion southwards; the Early Pallavas and their origin; their relation to the Andhras and the Tamil rulers of the South; the history of the Early Pallavas; the invasion of Samudragupta; the further history of the Early

Pallavas; Kadambas. Gangas, and other minor dynasties and their relation to the Pallavas; Pallava supremacy in South India: Pallava culture.

VII. *Cis-Vindhyan India in the age of the Guptas.*—Feudatories of the Andhras: the Chutus, the Abhiras. etc.; the Vidhyakas, the Vishnukundins, the Salankayanas, etc.; the Vakatakas; their rise and early expansion; the character of Samudragupta's southern invasion; the Vakatakas and the Guptas; continuance of Vakataka rule.

VIII. *The Pallava ascendancy in South India*—Pallava ascendancy in South India; the great Pallavas of the Simhavishnu line; the extension of Pallava authority into the Chola country; the Pallava-Chalukya struggle; check to the Chalukya advance in the south under Pulakesin; the continuation of the struggle; overthrow of the Simhavishnu line by Nandivarman Pallavamalla; literature, art, etc., during the period.

IX. *The Chalukyas of Badami.*—The early Chalukyas; Chalukya expansion under Pulakesin; check to Harsha's Imperial expansion; foundation of the kingdom of the Eastern Chalukyas; the successors of Pulakesin II; Chalukya overthrow by the Rashtrakutas; the general condition of the Chalukya kingdom: Hiuen-Tsang.

X. *The later Pallavas and the Pallava-Pandya Struggle.*—Later Pallavas; Nandivarman Pallavamalla; restoration of Pallava ascendancy. The Pallava-Pandya struggle; the Pallavas and the Rashtrakutas; the rise of the Gangas; the Gangas as Rashtrakuta feudatories; Dantivarman; Nandivarman of Tellaru; Nripatunga and Aparajita; the end of the Pallava ascendancy and the rise of the Cholas.

XI. *The Rashtrakuta Ascendancy.*—The Rashtrakutas, Dantidurga and the Pallavas; Krishna I; Dhruva and the Gangas; Govinda III; the expansion of the Rahstrakuta power; relation with the Gurjaras and of the Palas and the Eastern Chalukyas; the greatest expansion of the Rashtrakuta power under Amoghavarsha; the Gujarati branch of the Rashtrakutas Krishna II; Krishna III; successors of Krishna III; Rashtrakuta; and Paramaras; the supersession of the Rashtrakutas by the Chalukyas.

XII. *The Eastern Chalukyas.*—Eastern Chalukyas; Change of relationship with the accession of the Rashtrakutas to power; Vijayaditya II; assertion of the Rashtrakuta ascendancy under Govinda III and Amoghavarsha; relation between the Eastern Chalukyas and the Pallavas; internal dissensions; Chola intervention; Rajaraja II of the Eastern Chalukyas.

XIII. *The Chola Ascendancy in South India.*—The rise of the Cholas; the Pallava-Pandya wars; Vijayalaya; Aditya; Parantaka, the founder of the greatness of the Cholas; the Chola-Rashtrakuta struggle; Rajaraja the Great; Rajaraja; his relations with the Eastern Chalukyas; Rajendra and the expansion of the Chola empire; his invasions of Northern India and across the seas; the Chola Pandya war in the second half of the twelfth century; Ceylonese intervention; Kulottunga III, and the reassertion of the Chola authority over the

Pandyas ; the revival of the Pandya power ; the last Cholas ; the Hoysala intervention ; the establishment of the Pandya ascendancy ; end of the Cholas.

XIV. *The Chalukyas of Kalyani.*—The later Chalukyas ; the overthrow of the Rashtrakutas ; the Chola conquest of Gangavadi and its results ; the first wars of the Chalukyas against the Cholas ; the Raichur Doab, the bone of contention ; Somesvara Ahavamalla and the successors of Rajendra I ; relation between the Eastern and the Western Chalukyas ; Chola-Chalukya wars under Somesvara II and the early years of Vikramaditya : Vikramaditya VI ; the condition of his empire ; the successors of Vikramaditya ; the rise of the feudatory states ; the Kalachurya usurpation ; the Chalukya restoration and extinction.

XV. *The Pandya Revival in the South.*—The revival of Pandya power under the successors of Kulottunga III ; Rajaraja III ; Pandyan invasions under Maravarman Sundara Pandya I ; Hoysala intervention; Hoysala alliance with the Pandyas ; Hoysala dominance in the South under Maravarman Sundara Pandya II; Jatavarman Sundara Pandya I; his wars and the end of Hoysala dominance in the Tamil country ; successors of Jatavarman Sundara ; Maravarman Kulasekhara and the prosperity of the Pandya kingdom; the wars between his sons and the Muhammadan invasion.

XVI. *The Feudatory Dyntasties.—I. The Hoysalas.*—The feudatories of the Chalukyas ; the Hoysalas of Dvarasamudra ; foundation of their power ; its growth under Vishnuvardhana and Vira Ballala II. Hoysalas as an independent dynasty ; Narasimha II and the Hoysala expansion southwards; Somesvara and the Hoysala ascendancy in the south; division of the empire between Narasimha III and Vira Ramanatha; Vira Ballala III, ruler of the whole of the Hoysala territory ; the Muhammadan invasions.

XVII. *The Feudatory Dynasties.—II. The Yadavas of Devagiri.*—Seunas or Yadavas of Devagiri ; the early rulers ; Bhillama III, Viceroy of Somesvara I ; Seunachandra II ; Bhillama IV, the first paramount sovereign of this dynasty ; Jaituji ; Singhana ; Devagiri, his capital ; his wars against the Hoysalas and the Kakatiyas ; Krishna and Mahadeva; relations between the Yadavas and the Kakatiyas ; Yadavas and the Hoysalas ; Ramachandra ; Muhammadan invasions under him ; Harapala ; reduction of the kingdom by Mubarak Khilji.

XVIII. *The Feudatory Dynasties.—III. Kakatiyas of Warangal.*—Foundation of the Kakatiya power. Prola; Prataparudra; transfer of Capital to Warangal ; Mahadeva; Ganapati-Rudrama or Rudramba Prataparudra II ; Muhammadan invasions in his reign ; Krishna, his son the last ruler of the dynasty.

XIX. *The Muhammadan Invasions and the Foundation of Vijayanagar.*—Muhammadan invasions of South India, their character, extent, and result ; the empire of Muhammad Tughlak ; Muhammadan possessions south of the Vindhyas ; Hindu struggle for independence under Hoysala leadership ; foundation of Vijayanagar and the Bahmani kingdoms.

XX. *Vijayanagar under the first dynasty.*—The first dynasty; Harihara and Bukka; the wars of the latter; Harihara II, assumption of imperial titles and responsibility; relations with the Bahmani kingdom under Harihara and his successors; the Bahmani wars and their character; Devaraya II, the greatest ruler of the first dynasty; the city and the empire under him, rise of Orissa; alliance between Orissa and the Bahmani kingdom; Devaraya's successors; condition of the empire.

XXI. *Vijayanagar under the usurpation; Saluvas and Tuluvas.*—The rise of the Saluvas; their position in the empire; the Bahmani and Orissa invasions; Saluva Narasinga; the character of his usurpation; his services to the empire; Narasa as *de facto* ruler; his son Narasimha II and general rebellion in the empire; accession of Krishna Devaraya; the condition of the Bahmani kingdom in the period of usurpation and after; wars against the Bahmani kingdom and Raichur; the condition of his empire: rebellions in the empire and the last years of Krishna. Achyuta's restoration of order in the empire; character of his later administration; rise of Achyuta's brothers-in-law, the elder and the younger Tirumala; Sadasiva; the rule of the brothers Rama, Tirumala and Venkata.

XXII. *Vijayanagar under the* de facto *rule of the brothers.*—Sadasiva the nominal ruler; relations with the Bahmani kingdom; condition of the distant south; "fishery coast" and Travancore; foundation of the Nayakship of Madura; the Portuguese; Talikota and its results; condition of the empire.

XXIII. *The later empire at Penukonda.*—The new empire at Penukonda; Tirumala; the successors of Tirumala; division of the empire; Sriranga emperor; his struggle against the advance of Muhammadans; the empire reunited under Venkata; disaffection in the southern provinces; wars against the Muhammadans; end of the viceroyalty of Seringapatam; foundation of Mysore; death of Venkata.

XXIV. *The decline and fall of the Vijayanagar empire.*—War of succession; the weakened condition of Vijayanagar; the provinces of the empire; Gingi, Tanjore, Madura, Mysore and Ikkeri; the advance of the Mughals in the Dakhan, precarious condition of the Vijayanagar Empire; the last Emperor, Sriranga; his struggle for a united empire; end of the empire.

XXV. *Madura and Mysore, the sole remnants of the empire.*—Madura and Mysore continue as remnants of the empire; Maharattas in the South; Shaji's conquests for Bijapur; occupation of Gingi and Tanjore; Sivaji's invasion of the south; Madura under the Nayaks; Mysore under Chikkadevaraya Odaiyar and his successors to the usurpation of Hyder Ali.

(4) URDU.

The course shall consist of:—

(*a*) Prose books from different periods, including at least one modern work.

(b) Poetry books from different periods, including at least one modern work.

(c) Translation from prose and poetry books other than the set books, translation from English into Urdu to be made in an approved modern style.

(d) History of Language and Literature.

(e) Indian History—Muslim Period, *or* Arabic *or* Persian.

(5) (a) ARABIC OR PERSIAN (SELECTED LANGUAGE)

The course shall consist of :—

(a) Prose books selected from different periods.

(b) Poetry books selected from different periods.

(c) Translation from prose books other than the set books; translation from the set poetry books and from English into Arabic *or* Persian prose.

(d) History of Language and Literature with special reference to the set books.

(e) A selected period of early Muslim History.

The periods of History for Persian or Arabic may be one or other of the following :—

1. The first four Khalifas and the Umayyad Khalifate, excluding Africa and Spain.

2. The Abbasid Khalifate, excluding Africa and Spain and the wars of Crusades.

3. The Muslim conquest of Egypt and Northern Africa until the fall of the Abbasid Khalifate and excluding the wars of the Crusades.

4. The Arab conquest of and rule in Spain.
5. The wars of the Crusades.

(b) ARABIC OR PERSIAN (RELATED LANGUAGE).

The course shall consist of the study of selected pieces from one poet of the classical period and selected portions from the works of one standard prose writer. There shall be one paper in the examination of three hours' duration which shall include pieces for translation from Arabic or Persian into the main language.

(6) ORIYA OR MARATHI.

The course shall be the same as for the Dravidian Languages, with the substitution of Gaurian Grammar for Dravidian Grammar, and of the Early History of Orissa or the History of the Marathas for Early South Indian History.

(7) HINDI.

The course shall consist of :—

(a) The study of set books in Poetry (Ancient and Modern), Prose and Drama.

(b) The study of the History of Language and Literature.

(c) The study of Grammar (historical and comparative) Rhetoric and Prosody.

(d) Tranalation from English to Hindi to be made in a modern style.

(e) Composition.

(f) Related Language—Sanskrit or Urdu.

or

Cognate Subject : Indian History—Muslim Period.

Text-book.—

A History of Muslim Rule in India by Ishwari Prasad, (Indian Press, Ltd., Allahabad).

SYLLABUS FOR THE HISTORY OF THE HINDI LANGUAGE AND LITERATURE

[GROUP (v).]

A. Language.—

I. *General.*—(i) Its purpose, origin, definition, and development.

(ii) The Aryan family of languages. The language of the early Aryan settlers in India. Stages of development of that language—Prakrits—Apabhramsas—'Old Hindi.'

II. *The different groups.*—The Antarang and Bahirang groups of languages and their geographical distribution. Eastern Hindi and Western Hindi and their important literary dialects.

III. *The Language employed for literature* :—

(i) The Language of ancient Hindi literature with special reference to the works of Chandbardai, Kabir, and Amir Khusro.

(ii) Avadhi and its development with special reference to the works of Jayasi and Tulsidas.

(iii) Vraja-Bhasa and its development.

(iv) Khadi-Boli and its development. The origin of the term Hindi and its relation to Urdu and Hindustani.

IV. *Language and Dialect.*—The standard of literary language and the spoken language. Their relation and mutual influence. The dialect spoken by the Mussalmans of South India and its peculiarities regarding vocabulary, grammar and construction. The extent of Persian and other influence on the Hindi Language.

B. Literature.—

I. *General.*—The dawn of Hindi as a distinct language. Its early development. The different literary dialects represented by the term Hindi. A general survey of Hindi Literature. Division into periods. Main characteristics and tendencies of each period.

II. *The early Period.*—Specimens of Hindi found in the works of the SIDDAS and the JAINS. Peculiarities regarding matter and language.

III. *The Caran Period.*—Historical background. General characteristics regarding matter, language, and poetical forms.

(i) Dingal Literature—Khuman Raso; Bisaldev Raso; Prithviraj Raso: Prithviraj Vijay; Alha Khand; Hammir Raso.

(ii) Miscellaneous literature—The works of Amir Khusro, Mulla Daud, and Gorakhnath.

IV. *The Bhakti Period.*—The religious awakening, Nirgun School and Sagun School and their sub-divisions. Historical background. The influence of political and social conditions on literature. The main currents. Their characteristics regarding language and the religious philosophy expounded.

(i) *Gyan Kavya.*—The important poets—Jayadev, Namdev, Sadna, Ramanand, Pipa, Raidas, Kabir, Dharmdas, Guru Nanak, Farid, Malukdas, Dadudayal, Sunderdas, Daria Saheb, Carandas, Garibdas, Sahjobai, Tulsi Saheb, Faltoodas.

(ii) *Prem Kavya.*—The important works and their authors; Mrigavati (Kutuban), Madhumalati (Manjhan), Padmavat (Jayasi), Citravali (Usman), Indravati (Nur Muhammad), Kanak Manjari (Kasiram).

(iii) *Ram Kavya.*—Vaisnavism. The Rama School. Tulsi and his works. Kesavadas—his importance as a poet artist. Nabhadas (Bhaktamal). Hridayram. Maharaj Visvanath-sinh. Ramcarandas Harbakhs Sinh. Giridhar das.

(iv) *Krishna Kavya.—Vaisnavism.* The Krishna School. Vidyapati, Surdas and other Astachhap poets. Mirabai. Kriparam. Narottamdas. Swami Haridas. Hitaharivams. Balabhadr Misr. Senapati. Sunderdas. Rasakhan. Alam.

(v) *Akbar and the Hindi poets of his court.*—Manohar Kavi; Rahim; Virbal; Todarmal; Narhari Bandijan; Gang.

(vi) *Prose writers of the period.*—Goraks; Vitthalnath and Gang.

V. *Riti Period*—The development of Literary forms in Hindi Poetry. Poetical works on Rhetoric and Prosody. Erotic Poetry. Kesav Das; Tripathi brothers—Bhushan—his Virkavya; Matiram; Biharilal; Dev: Bhikhari Das; Padmakar; Pratapsahi; Ghanānand; Raja Jaswant Sinh.

VI. *The Transition Period.*—Temporary dearth in the production of literature. Dawn of prose literature. Impetus given to the same by Christian Missionaries and the Arya Samajists. The poets and prose writers of the period.

VII. *The Modern Period.*—Outstanding features of the period. The development of Khadi-Boli prose and poetry. Influence of Bengali and Marathi literature and that of the Western culture and literature. Renaissance in Hindi literature. Makers and masters of Modern Hindi Prose.

(i) Important Vraj-Bhasa poets of the age.

(ii) Important Khadi-boli poets of the age.

(iii) Development of prose—Important writers.

(iv) Development of the Drama—Jayashankar and other important dramatists.

(v) Development of the Novel—Premchand and other novelists.

(vi) Development of Galp-sahitya—Important writers.

(vii) Literary criticism in Hindi—The important critics.

(viii) Important writers on subjects like History, Biography, Science, Politics, Philosophy, etc.

(ix) The part played by Journals in the development of Hindi literature.

(x) The service rendered by institutions like the Nagari Pracharini Sabha for the development and preservation of Hindi literature.

(xi) Modern tendencies of Hindi Literature.

SYLLABUS FOR GRAMMAR.
(HISTORICAL AND COMPARATIVE).

I. *Introductory.*—(i) The origin of language. Classification. Dialectical separation and growth of literary standard languages. Dialects and cognate languages.

(ii) The Aryan family of languages. The language of the early Aryans who settled in India. The development of the Prakrits. Eastern and Western Hindi.

II. *The Literary Dialects.*—The literary dialects of Eastern and Western Hindi. Comparison between Vraj-Bhasa, Avadhi, and Khadi-Boli.

III *The Hindi Alphabet*—(i) The script. History of the letters. Special symbols used for foreign sounds. (ii) The Sound values. How far the alphabet is phonetic, Pronunciation. Written symbols and sounds.

IV. *Phonology*.—(i) The vowel system. Comparison with the Sanskrit vowels. Diphthongs—Comparison with Vraj-Bhasa and Avadhi vowels. (ii) Consonants and their classification. Conjunct consonants. Sandhi—Nasalisation. Anusvara and Ardhanusvara. Final aspiration. Accent. Interchange of consonants in Old Poetry.

V. Word-building. Classification of words. Parts of speech. Substitute for the Article.

VI. *Nouns*. Classification. Gender :—According to meaning, and according to ending. Exceptions. Gender indicated by different words. Gender of Compound Nouns and Urdu Nouns.

Number :—Formation of plurals. Special uses of Singular and Plural.

Case:—The different cases and declension of nouns. The case-endings. Their history. Comparison with Vraj-Bhasa and Avadhi case-endings. Other parts of speech used as nouns.

VII. *Pronouns*.—Classification. History of the pronouns. Comparison with those of Vraj-Bhasa and Avadhi. Compound pronouns.

VIII. *Adjectives*—Classification. Comparison of adjectives. Uses of Sa. Sarikha, Namak, Rupi, etc. The a, a, and o endings of Avadhi, Khadi-boli, and Vraj-Bhasa adjectives.

IX. *Verbs*.—Roots, single and combined. Intransitive, Transitive, and Causative. Their formation. Roots formed out of nouns. Tenses. Their formation. Roots formed out of nouns. History and use of Ne. The present, past and future tenses of the Vraj-Bhasa and Avadhi verbs. Moods:—How formed. Voices:—Active, passive, and impersonal. Kridants and their uses. Compound (close, loose, synonymous, alliterative) verbs, Noun compounds. Onomatopoetic verbs.

X. *Adverbs*.—Classification. Adverbial phrases.

XI. Post-positions; Conjunctions; Interjections.

XII. Prefixes and suffixes; (Hindi, Urdu, and Sanskrit).

XIII. *Vocabulary*.—Tatsama, Tatbhava, Desi, Vikrit, and foreign words.

XIV. *Semantics*.—Changes in the meanings and usage of words. Elevation, degradation, and specialisation of native and foreign words.

XV. Order of words in a sentence. Components of sentences. Punctuation. Phrases and proverbs.

NOTE.—The study of Rhetoric and Prosody shall be limited to the matter contained in the book 'KAVYAPRADIP' by Pandit Rambahori Sukl, Published by Hindi Bhavan, Lahore.

(8) GREEK OR LATIN.

The course shall consist of :—

(*a*) Prescribed portions of the writings of the more important Greek or Latin authors.

(*b*) Grammar of the language with reference to Indo-Germanic Grammar.

(*c*) Greek or Latin Prose composition and translation of unprepared passages.

(*d*) A general knowledge of Greek History to the death of Alexander, or of Roman History to the death of Trajan, with a more minute knowledge of some prescribed period.

(*e*) A general knowledge of Greek or Roman Literature with a more minute knowledge of the authors of the prescibed books.

(9) FRENCH OR GERMAN.

The course shall consist of:—

(*a*) The study of set books representative of various periods of French or German literature.

(*b*) The History of French or German literature with special reference to the set books.

(*c*) The history of the French or German language.

(*d*) Translation from French or German into English, and of English into French or German.

(*e*) Composition.

(*f*) A period of European History with special reference to French or German History.

In the examination the subjects for composition shall be taken from the set books or shall relate to the periods of French or German literary or political history studied in the course. In the translation paper the passages set for translation from French or German into English shall be specimens of modern French or German, not taken from the set books.

(10) HEBREW.

The course shall consist of :—

(*a*) Set books.

(*b*) Grammar and translation from and into Hebrew.

(*c*) History of Hebrew Language and the Literature.

(*d*) A selected period or periods of the History of the Jews.

(11) SYRIAC.

The course shall consist of :—

1. Prose books selected from different periods.
2. Poetry books selected from different periods.
3. Grammar and translation from and into Syriac.
4. History of Syriac Language and the Literature.
5. History of the Syrians and of the Syrian Church in India, with special reference to the history of a selected period or periods.

Syllabus for the History of Literature for Arabic, Persian and Urdu under Part II.

(Any one of the following periods may be prescribed).

Periods of Literary History for Arabic.—

1. Pre-Islamic Period.
2. First two Centuries of Islam.
3. Later Abbasid Period—up to the sack of Bagdad.
4. History of Arabic Literature in Spain.

Periods of Literary History for Persian.—

1. Persian Literature under Tribal Kings, 850—1000 A.D.
2. Safawi Period.
3. Development of Persian Literature in India.
4. Modern Persian Literature.

Periods of Literary History for Urdu.—

1. Early Hindi and Dakhni Literature.
2. From Wali to Mir and Sawda.
3. From Sawda to Ghalili.
4. Development of Prose after 1858.
5. Modern Essays, Novels and Dramas.
6. Modern Urdu Poetry.

GROUP (vi)—INDIAN MUSIC.

In addition to the Intermediate syllabus, the course shall include the following:—

Theory.

Manodharma sangita and its forms; Paddhati in Raga alapana, Kalpana svaras and Niraval.

Lakshana and sanchara of the following 20 ragas:—

Dhanyasi.	Darbar.	Kedara.
Asaveri.	Kānada.	Athana.
Chakravaka.	Surati.	Devagandhari.
Vasanta.	Natakuranji.	Nata.
Saurashtra.	Kedaragaula.	Shanmukhapriya.
Ritigaula.	Sahana.	Saranga.
Madhyamavati.	Suddha saveri.	

Twenty-two srutis and the discussions relating thereto. Nomenclatures for the 22 srutis.

Tala dasa pranas. Desadi and Madhyadi talas.

Lakshana of the musical forms figuring in Art music, Sacred music, Dance music and Opera.

Musical Prosody.

Alankara. Gamakas.

Musical Appreciation. Styles of great composers. Critical study of two Kirtanas each of Tyagaraja, Muthuswamy Dikshitar and Syama Sastri and one each of any six of the other composers mentioned in paragraph 3 under History (see below).

The principal concert instruments of South India; their construction and use.

Types of Sārira. The Larynx and the Ear.

Contemporary Music.

Acoustics.—Production and transmission of sound; Resonance. Sympathetic vibration. Echoes; Beats. Scales of just intonation and equal temperament. Absolute Pitch and Relative Pitch. Modal shift of tonic. Gramophone and the Radio. Acoustics of concert halls.

History.

Raga classification in Ancient music. The *trayodasa* lakshanas mentioned for ragas in the ancient Sanskrit works.

Musical forms and their evolution. History of the Vina.

History and development of South Indian Music with special reference to the contributions of the following composers and lakshanakaras. Also short biographies of these composers and lakshanakaras :—

Jayadeva.	Arunachala Kavirayar.
Purandara Das.	Gopalakrishna Bharati.
Narayana Tirtha.	Svati Tirunal.
Ramamatya.	Subbaraya Sastri.
Somanatha.	Pallavi Gopalayyar.
Venkatamakhi.	Anayya.
Kshetrajna.	Vina Kuppayyar.
Ahobala.	Ghanam Krishnayyar.
Bhadrachala Ramadas.	Mysore Sadasiva Rao.
Paidālā Gurumurti Sastri.	Pallavi Seshayyar.
Pachimiriam Adiyappiah.	Karur Dakshinamurti Sastri.
Ramaswamĭ Dikshitar.	Ramaswamy Sivan.
Tyagaraja.	Maha Vaidyanatha Ayyar.
Muthuswamy Dikshitar.	Dharmapuri Subbarayar.
Syama Sastri.	Ramnad Srinivasa Ayyangar.

Principal seats of music during the 17th, 18th and 19th centuries in South India.

Practical.

Two Lakshana gitas. Four varnas of an advanced nature including one jhampa tala varna; 2 padas, one ragamalika, one tillana; one of Tyagaraja's Pancharatna and the following compositions :—

1949, 1950 and 1951

1.	Danyasi	...	Ramabhirama.
2.	Asaveri	...	Rara mayintidaka.
3.	Chakravaka	...	Etulabrotuvo.
4.	Vasanta	...	Etla dorikitivo.
5.	Saurastra	...	Sri Ganapatim.
6.	Ritigaula	...	Janani.
7.	Madhyamavadi.	...	Rama Katha.
8.	Darbar	...	Aparadhamula.
9.	Kanada	...	Sukhievvaro.
10.	Surati	...	Angarakam.

11. Kedaragaula ... Nilakantham.
12. Natakuranji ... Ekkalathilum.
13. Sahana ... Inkevaru.
14. Suddhasaveri ... Darini.
15. Kedara ... Rama nipai.
16. Athana ... Elanidaya radu.
17. Devagandhari ... Karunasamudra.
18. Nata ... Jagadanandakaraka.
19. Shanmukhapriya ... Marivere.
20. Saranga ... Emidova.

Note.—The compositions prescribed are only indicative of the standard expected and it is open to the Colleges to teach alternative pieces of equal standard.

As examples of compositions of equal standard, the following are suggested:—

Surati—Kana venum laksham.

Athana—Tiruvotriyur Tyagarajan.

Alapana of the ragas mentioned above in paragraph 2 under theory. Rendering of Kalpana svaras to compositions learnt in the following ten ragas :—

(1) Todi (2) Mayamalavagaula (3) Saveri (4) Bhairavi (5) Anandabhairavi (6) Mohana (7) Kambhoji (8) Sankarabharana (9) Pantuvarali (10) Kalyani;

and in the following talas :—

Adi, Rupaka, Chapu.

In the practical examination the candidates may offer vocal music or one of the following instruments :—

Vina, Gotuvadya, Violin, Flute.

Excepting the Vina candidates, the other candidates shall sing or play to the sruti accompaniment of the Tambura.

Books for Reference—

1. Gayakalochanam by Tachur Singaracharlu.
2. Ganendu Sekharam by Tachur Singaracharlu.
3. Pallavi Swarakalpavalli by Tiruvottiyur Tyagayyar.
4. Sangita Sampradaya Pradarsini by Subbarama Dikshitar (2 vols.)

5. Sangita Swara Prastara Sagaram by Nadamuni Pandithar.
6. Karunamirtha Sagaram by Abraham Pandithar.
7. Principles of Layam by K. Ramachandran, (The Indian Music Publishing House, Madras).
8. Music of Hindusthan by A. H. Fox Strangways.
9. Music and Musical Instruments of Southern India and Deccan by Capt. Day.
10. Madras Museum Bulletin on South Indian Musical Instruments by P. Sambamurti (Government Museum, Egmore, Madras).
11. Musical Instruments in the Indian Museum, Calcutta, by Dr. Meerwarth.
12. Richardson : Sound.
13. Acoustics of the Auditoria br Davis and Kaye.
14. Svaramelakalanidhi—edited by M. S. Ramaswamy Ayyar, (Annamalai University Publication).
15. Varna Malika by K. Ramachandran—(Messrs. V. Ramaswami Sastrulu & Sons, Esplanade, Madras).
16. Chaturdandiprakasika published by the Music Academy, Madras.
17. Gana Bhaskara by K. V. Srinivasa Ayyangar.
18. Syama Sastri and other composers by P. Sambamurti.
19. Guruguha Ganamrta Varshini by Vedanta Bhagavatar.
20. Kirtnasagaram, Book II by P. Sambamurti.
21. Kirtanasagaram, Book III by P. Sambamurti.
22. Songs by T. Lakshmana Pillai.
23. Acoustics in Tamil by R. K. Viswanathan.
24. Dikshitar's Compositions by Nataraja Sundaram Pillai.
25. South Indian Music, Books 1 to 3 by P. Sambamurti.
26. Nowka Charitra of Tyagaraja, edited by P. Sambamurti.
27. The 72 Melaragamalika of Maha Vaidyanatha Ayyar, Edited by Sabhesa Ayyar.
28. Kirtanasagaram, Book IV by P. Sambamurti.
29. Tanjai Peruvudayan Perisai, by K. Ponniah Pillai.
30. Sangita Sudha, Tamil translation of Chathurdandiprakasika and Sangitha Saramarta, published by the Music Academy, Madras.

31. Grammar of South Indian Music by C. S. Ayyar.
32. Sangita Lakshana Sangraha by A. S. Murti.
33. Tala Dipika by K. Ramachandran.
34. South Indian Music, Book IV by P. Sambamurti.
35. Purandaramanimala by Lalitangi.
36. "Flute" by P. Sambamurti, Second Edition.
37. Introduction to the Study of Musical Scales by Alain Danielou.
38. Sangita Martanda.

GROUP (vii)—WESTERN MUSIC.

Theory—

Syllabus of the Senior Division of Trinity College of Music.

Practical.—

Syllabus of the Higher Local Division of Trinity College of Music.

(NOTE.—The syllabuses are obtainable from the Local Secretary).

GROUP (viii)—GEOGRAPHY.

(For the Examination of 1949.)

REGIONAL GEOGRAPHY OF INDIA.

A study of the setting, or space relations of the country, its physical and structural evolution, including its soil and mineral resources; its climatic conditions and natural vegetation, leading to the division of the country into several distinct natural regions or environments, with correspondingly different human responses as shown by the population, its distribution, occupations, racial and social characteristics, etc.

A detailed consideration of each of the several natural regions distinguished above, with special reference to the nature of the physical and other factors involved; and of the human responses to them.

Relation between geographical regions and political divisions. Frontiers.

PHYSICAL BASIS OF GEOGRAPHY.

1. *Climatology*:—

Temperature:—Insolation—horizontal and vertical distribution of temperature.

Pressure:—Distribution and changes of pressure—wind systems—planetary, seasonal and local winds.

Precipitation and humidity:—Weather types, cyclones, anti-cyclones, etc.

Climate:—Classification of climates—climatic regions of the world.

2. *Geomorphology* :—

The earth—shape, size, origin, age, constitution, structure, materials of the crust, geological history. The evolution of land forms: forces at work, internal and external. Cycle of erosion under different climate conditions. Influence of structure on land forms.

3. *Oceanography* :—

Distribution of land and sea; theories to explain this distribution. Oceans—their size—origin, submarine topography, temperature, salinity, etc. Movements of water: waves, tides, currents, drifts, etc. Deposits on the ocean floor. Life in the oceans—coral reefs, etc.

N.B.—*More advanced treatment than in the Intermediate Syllabus.*

ECONOMIC GEOGRAPHY.

1. *Scope of the subject.*—Stages of economic development.

2. *Agriculture.*—Economic and geographic aspects—methods and types—irrigation. Conditions of growth, distribution and trade in relation to the following:—cereals—pulses—sugar—fruit—spices—oil-seeds—fibres: cotton, jute, mulberry, (Silk), etc.; Plantation crops: tea, coffee, rubber and tobacco.

3. *Animal husbandry.*—World distribution of cattle and sheep—meat and dairy produce—wool.

4. *Forestry.*—Temperate and tropical forests—forest products and industries—trade in forest products—conservation.

5. *Fisheries.*—World's chief fishing grounds—inland fisheries—fish trade.

6. *Mineral resources.*—Coal—iron—petroleum—other metals and minerals. Production, distribution and associated industries.

7. *Industrial development.*—Manufactures—factors of localisation—power resources (coal, oil, hydro-electric power)—supply and efficiency of labour—raw materials. The industries associated with sections 2 to 6, with special emphasis on the following:—cotton and jute; iron and steel; and chemical industries.

8. *Distribution of population.*—Colonisation and emigration.

9. *Distribution and exchange—Transport*: Methods and development—ocean routes—inland-waterways—ports—land transport—road and rail—air transport. Markets—trade policies.

HISTORICAL AND POLITICAL GEOGRAPHY.

1. *General* :—

Scope of Historical Geography—geographic determinism *vs.* possibilism.

The chief factors of environment, and their influence on Man: Location, physical features, climate and natural resources.

Man's adjustment to and control of environment: movements of peoples—growth of settlements and capitals—extent and expansion of

tribal areas, kingdoms, empires and other states—frontiers—lines of communication. Introduction of plants and animals in new lands, improvement of breeds.

Stages of civilisation and their relation to environment.

2. *Historical Geography*:—

(a) *India*:—The influence of physical factors on racial and linguistic distribution and on the course of History. Repeated invasions by land—empire-making and empire-breaking to the 18th century. Indian expansion to the East Indies and Indo-China. Sea contact with Europe from the 16th century onwards. Stages in the growth of the British power in India. The Present political map of India.

(b) *The Far East*:—The influence of location and physical factors on the national characteristics of the Chinese and the Japanese and on the course of their history. Cultural and commercial connexion of China with India from early times. European connexion in the 19th century with China and Japan. Rise of Modern Japan and the Chinese Republic. Problems of the Pacific. Russia and the Trans-Siberian Railway. Sino-Japanese conflict—Manchukuo. Civil war in China. U.S.A. and Philippine independence. Britain and the Singapore base. Economic development of the Dutch East Indies.

(c) *The Moslem World: Central and South-Western Asia and Northern Africa*:—Influences of the deserts, the oases and the enclosed seas—highways by land and sea—movements of peoples from Central Asia—seats of old empires—rise and spread of Islam—the Mediaeval Arab Empire—the Turks—the break-up of the Turkish Empire—the new national states.

(d) *Classical and Christian Europe*:—Influence of peninsulas, enclosed seas, mountains and plains as well as of climate. Greek city-state and spread of Hellenism in the East. Growth and break-up of the Roman Empire. The map of Mediaeval Europe. Birth of nation-states. The decline of the Saracens and the rise of Turkey.

(e) *European Expansion*:—Age of discoveries—Spain, Portugal, Holland, France and Britain—trade and colonization in the old and new worlds—Monroe doctrine. Discovery and colonization of Australia—partition of Africa.

(f) *The Nineteenth Century*:—Reactions of the Napoleonic wars and the rise of Italy and Germany. Rise of Japan.

3. *Political Geography*:—

(a) *Europe in 1914*:—The World War—the peace treaties and the post-war map of the world—League of Nations and the mandatory states—the rise of new small states.

(b) *The aftermath of the Great War*:—New forces and new groupings of the powers: Fascism and Communism. Modernisation in Turkey, Iraq and Persia. Egyptian independence. The Polish corridor—Italian ambitions in the Mediterranean and Africa—Spanish Civil War—Britain in relation to Europe. The British Commonwealth in relation to World politics. Indian nationalism and the Indian federation—Indian nationals abroad. The World outlook.

ANTHROPO-GEOGRAPHY.

Preliminary:—Scope and importance of this study—interaction of man and his environment.

Factors used in the Classification of Man:—Note avoidance of generalities as language, religion, etc.; need for precise measurement. Problem of modification and inheritance. Cephalic index, head shape, facial proportions, nasal index, stature, hair, pigmentation, physiological (blood group) basis. Pigmentation in greater detail: eyes, hair and skin; relation to climate, different theories; question of mutation, nature and texture of skin and flesh as affected by climate.

Racial distribution according to skin-colour—distribution of anthropological and other characteristics.

Origin and development of Man—primates—man-like apes, ape-like men—reconstruction of the primitive types of homo-sapiens—relation of geological and anthropological evidence in determining their ages. Development of brain.

Importance of the Ice Age as the dividing line between pre-historic and modern man. Changes during and after the Ice Age. Diffusion of modern types.

Palaeolithic and neolithic ages: general account of their extent and culture. Growth of domestic life, agriculture, etc.—trade—copper—search for tin—bronze age. Development of 'civilisation'—leading to study of earlier centres, Mesopotamia, India, Egypt, and later ones, Crete, Greece. Control of these centres by geographical factors—e.g., climate, routes, harbours: minerals, etc. Similar control apparent in more extensive and intensive civilization in Iron Age—Asia Minor, etc. Development of Asiatic (e.g., China) and European culture and civilization centres.

Study of the natural spread of peoples and trade movements—routes eastward and westward, northward and southward—gradual population of the world. Unsolved problems, e.g., Maya civilization—Incas—Cambodia, etc.

Main groups of peoples at present time: Negroids and Negritos.

Australoids. Their origin, distribution, cultures. Types—e.g., Upper Congo Pygmies, Semangs, Bushmen, Tasmanians, Maoris, Melanesians, etc. Possible relation to Palaeolithic types of some of these.

Mongoloids—e.g., Mongolians, North American Indians, Eskimos.

Caucasoids—e.g., Nordics. Alpines, Mediterranean, Associated types, e.g., Armenoid, The "Brown Race" problem. The study of types, e.g., Bedouins, Scandinavian, Pathan, etc.

Population of India—racial, linguistic and cultural groups. Cycles of culture and immigration. Links with the West and the Far East. Necessity for further intensive study as in Western Europe. Composition of present population.

Present problems and the future—development of the study of genetics—application to population problems.

BIO-GEOGRAPHY.

1. *General*:—Biology and Bio-geography—multiplication of numbers and natural expansion—struggle for existence; modes of association,—limitations of the environment and adaptations to it, e.g., evolution, migration, isolation.

2. *Plant Geography*:—The environment of plant life—the influence of climatic and soil factors, and the modes of adaptation—the habitat; plant and animal neighbours—plant communities, and successional types—dispersal and migrations of plants.

The great plant formations of woodland, grassland and desert and their chief divisions—their characteristics and distribution—their relations to their environments.

Cultivated plants, their distribution—forests. Their relation to climate, soil and water-supply: their economic value.

3. *Animal Geography*:—The influence of the environment upon the development, habits and migrations of animals.

The zoo-geographical regions: their characteristics and extent; their relations to past and present physical conditions; the geographical units within the zoo-geographical regions; their faunas and their adaptations to the geographical conditions.

Aquatic life—relations to the conditions of the water, and to food supply—the divisions of aquatic life: their characteristics.

Domestic animals; their distribution and characteristics, Sea-fisheries, their physical and biological conditions.

PRACTICAL GEOGRAPHY.

A. *Study and Interpretation of*:—(1) Topographic maps of India on scales 1": 1 mile; $\frac{1}{2}$": 1 mile; $\frac{1}{4}$": 1 mile. (2) India and adjacent countries on the scale of 1/M. (3) Standard topographic maps of some of the chief countries of the world (Great Britain, France, Germany, U.S.A., Switzerland, etc.). (4) International maps. (5) Weather maps. (6) Simple geological maps.

B. *Methods of representing* climatic, economic and other geographic data by maps and diagrams.

C. *Simple methods of survey*.—Chain, prismatic compass, plane-table, clinometer, level and theodolite.

D. *Methods of determining Latitude and Longitude—Time.*

E. A study of the principles and geometric methods of construction of the following map projections:—

(1) *Conical Projections*:—Equi-distant with one standard parallel, with two standard parallels, Bonne's, equal area with two standard parallels, orthomorphic, polyconic and international.

(2) *Cylindrical Projections*:—Equi-distant, equal area and orthomorphic.

(3) *Azimuthal Projections*:—Equi-distant, equal area and orthomorphic, Cassini's and Lambert's.

(4) *All World Projections:*—Sinusoidal; Mollweide, Orthographic, Aitoff's, etc.

(5) *Choice of Projections.*

N.B.—*Practical work note-books should be submitted by the candidates.*

Text-books.

Books for Study:—

P. Lake: Physical Geography, (Cambridge University Press).

A. Wilmore: Groundwork of Geography, (G. Bell & Sons).

Longwell, Knopf and Flint: Text-book of Geology—Part I (John Wiley & Sons).

Kendrew: Climate (Oxford University Press).

Austin Miller: Climatology. (Methuen).

Murray: Ocean. (Home University Library—Butterworth).

Jameson and Ormsby: Mathematical Geography—Volume I, (Pitman).

Alice Garnett: Geographical Interpretation of Topographical Maps, (Harrap).

C. C. Carter: Land Forms and Life. (Christophers).

Hardy: Geography of Plants, (Oxford University Press).

Newbigin: Animal Geography. (Home University Library—Butterworth).

C. K. Elton: Animal Ecology.

Chisholm and Stamp: Handbook of Commercial Geography, (Longmans).

Lyde and Shackleton: Atlas of Economic Geography, (Bartholomew).

Oxford Advanced Atlas: Bartholomew, (Oxford University Press).

Bowman: New World, (Harrap).

C. B. Fawcett: Political Geography of the British Empire, (University of London Press).

Unstead: New Regional Geography, (Longmans).

Books for Reference:—

Imperial Gazetteer of India, Volumes 1 to 4 and 26.

Lyde: The Continent of Asia. (Macmillan).

L. D. Stamp: Asia—A Regional and Economic Geography, (Methuen).

Kendrew: Climates of the Continents, (Oxford University Press).

A. F. W. Schimper: Plant Geography upon a Physiological Basis (Clarendon Press).

Febvre : A Geographical Introduction to History, (Kegan Paul).
Brunhes : Human Geography, (Harrap).
Vidal De La Blache : Principles of Human Geography, (Constable).
Semple : Influences of Geographical Environment.
Salisbury : Physical Geography.
Ll. R. Jones : North America, (Methuen).
Shanahan : South America. (Methuen).
Griffith Taylor : Australia, (Oxford University Press).
L. W. Lyde : Continent of Europe, (Macmillan).
Shackleton : Europe, (University of London Press).
Fitzgerald : Africa, (Methuen).
Haddon : Races of Man.
Dudley Buxton : the Peoples of Asia.
Daryll Forde : Habitat, Economy and Society.
Griffith Taylor : Environment and Race.

(*Note.*—The following Changes will be given effect to from the Examination of 1950.)

SYLLABUS FOR GENERAL REGIONAL GEOGRAPHY OF THE WORLD.

Section I.

Major natural regions of the World. More advanced treatment than in the Intermediate stage to be expected.

Section II.

Detailed study of the regions mentioned below, studied as units (Problems peculiar to the regions to be emphasized).

Asia—U.S.S.R., Middle East, South East Asia, China and Japan.

Europe—N.W. Europe including Germany and the Mediterranean lands.

Africa—The Union of South Africa, the Nile Valley and W. Africa.

N. America—U. S. A. the Basin of the St. Lawrence, the Canadian Prairies.

S. America—Argentina, Brazil and Chile.

Australasia—Australia and New Zealand.

Note.—

1. The question paper to be in two parts :
   Part I.—General.
   Part II.—Detailed Study of the specified Regions.
2. Number of questions to be answered from the parts :
   Part I.—2 questions out of 4.
   Part II.—3 questions out of 6.
3. Questions to be set to include Continents.

SYLLABUS FOR PRACTICAL EXAMINATION IN GEOGRAPHY.

A. *Map Work.*

(a) Study and Interpretation of

(i) Survey of India Topographic maps (One inch, half inch and degree sheets).

(ii) Standard Topographic maps of Britain, France and U. S. A.

(iii) Weather maps of India.

(b) Study of Carte International du Monde maps.

(c) Diagrammatic and Cartographic representations.

B. *Map Projections* :—

Study of the principles and methods of construction of the following. (Graphic methods only required).

(1) *Conical Projections.*—Equi-distant with one and two standard parallels, Bonne's equal area, Polyconic and International.

(2) *Cylindrical Projections.*—Equi-distant, equal area and orthomorphic.

(3) *Azimuthal Projections.*—Equi-distant, equal area and orthomorphic with the pole as centre.

(4) *World Projections.*—Sinusoidal and Mollweide.

(5) *Choice of Projections.*

(6) Special Projections. Interrupted Mollweide, recentered sinusoidal, Goode's Homolographic nets.

Questions may be set to test candidates in the construction, choice and identification of a net.

C. *Surveying* (Simple methods only).—

Chain, Prismatic compass, Plane-Table, Clinometer, Level and Theodolite.

D. Methods of determining Latitude, Longitude and Time.

Rules for conducting the examination :—

1. The Practical Examination will be for three hours.

2. The marks for the Practical Examination will be 100, (80 for the practical test and 20 for practical notebooks). (Candidates must submit their practical notebooks, etc., at the Practical Examination).

3. Students to be required to answer four questions only.

GROUP (ix)—HOME SCIENCE.

I. HOUSEHOLD ECONOMICS.

Scope.—

Household Economics as comprising the general business aspects of both House-keeping and Home-making. The science and art of planned family living; a complex study. Relation to other studies

like Biology, Chemistry, Mathematics, Economics, Sociology, Art, etc. The family, its importance in individual and social life. Functions of the family.

Human Wants.—

Character of wants. Efforts and satisfactions. Relative urgency of different wants; necessities, comforts and luxuries. Principle of substitution of wants. Law of Diminishing Utility. Wealth and welfare.

Standard of Life.—

Constituents of standard of life. Different standards. Importance of standard of life. Standard of life and wages. Means of raising the standard. The Indian standard of life. Rural and urban standards.

Production in the Home.—

The old self-sufficing home. The extreme modern apartment hotel. The average home both in the East and West. Growing dependence of the home on organised industry. Tendency for production in the home to be superseded by consumption.

Labour in the Home.—

The house-wife, chief labourer. The share of the husband and the children. Domestic servants. Labour-saving appliances. The organised household. Leisure and its value. Women's activities outside the home.

Household Income and Expenditure.—

Money income and real income. Supplementary family income. Subsidiary family occupations—spinning, weaving, kitchen gardening, poultry keeping, dairying, etc. Husband as chief wage-earner. Women and children as wage-earners.

Schedule of anticipated income and its allotment between various expenditures. The family budget, its main items. Principle of equimarginal satisfactions. Family budget studies. Engle's laws. Financial records of the household. The cash book. Other records. Household credit and debt.

Main items of Family Budget.—

1. *Housing*:—Business aspects of owning the house and renting the house. Standards of housing for different classes. Minimum housing. Overcrowding and its effects. Housing legislation. Building Societies.

2. *Food*:—Food choice and nutritional values. Relative food costs. Individual and communal kitchen. Uneconomic consumption. Drink and its evils. The tea shop and its effect on income of working classes.

3. *Clothing*.—Ready-to-wear, tailor-made and home-made clothes. Clothing in India. The sewing machine in the home. Foreign and Swadeshi materials. Economics of Khaddar, Waste in clothing.

4. *Capital and Savings.*—Need for saving. Temporary savings and permanent savings. Institutions for small and big savings. The Savings Bank, Post Office Savings Bank, indigenous institutions for saving like the Chit Fund, Nidhi, etc. Current and Deposit Banking Accounts. The cheque and its use. Money lenders, borrowing, interest and usury. Investments—shares and stocks, real property, life insurance. Different types of policies. Jewels and their importance in Indian life.

5. *Depreciation Charges.*—Household equipment. Need to maintain family property intact, repairs. The economic use of old clothes, packing materials, tins, etc. The problem of storage of household articles.

6. *Cultural Expenses.*—Expenditure on education, travel, recreation. Subscriptions for personal enjoyment and in support of social welfare schemes. Family costs—health, sickness, death.

Economics of Household Purchases.—

Wholesale and retail purchase. The retail shop. Piecemeal purchase and purchase for the month. The Co-operative Store and its importance. Itinerant vendors, hawkers, pedlars, etc. Proper weights and measures. Laws regarding adulteration of food-stuffs. Cash purchase and credit purchase. Different articles of consumption and where they come from. Tariffs and their effects on prices.

Money.—

Money, its nature and functions. Different types of money. Indian currency. Relative values of different currencies. Price level and value of money.

Women and Civic responsibilities.—

Local authorities, Municipalities, District Boards, Panchayats; their duties. Public Utilities, like supply of light, water, conveyances, telephone, post and telegraph services, etc. Women and local administration.

Income and expenditure of public authorities. National and local taxes. Main Indian taxes.

II. BACTERIOLOGY AND HYGIENE.

(i) BACTERIOLOGY AND PROTOZOOLOGY.

I. *Bacteria* :—

(*a*) History : Pasteur, Lister, Koch, Jenner, Manson, Ross.

(*b*) Relation to lower plants and to Viruses—

1. Moulds and diseases : Thrush, monilia, ringworm, trichophyton, Madura foot.

   Household moulds : Mucor Penicillium, Aspergillus.

2. Yeasts.

(*c*) Nature, Structure, Functions :—

Functions :

(a) Beneficial—

1. Protein cleavage, putrefaction, purification, example:— purification of sewage.
2. Fermentation (including yeasts) examples:—souring of milk, grains, ripening of cheese, toddy.
3. Nitrification--Nitrogen fixation, growth of leguminous crops, dhal, beans, peanuts, etc.

(b) Harmful—disease production.

4. Toxic bacterial products :— Decomposition products, toxins.

(*d*) Conditions of life and Metabolism.

(*e*) Simple classification of pathogenic bacteria—

1. Cocci : staphylococci, streptococci, diplococci.
2. Bacilli : show motility and spore formation.
3. Vibrios.
4. Spirilla.

(*f*) Methods of prevention and principles involved in the prevention of certain common bacterial diseases with practical application for the household :—

Tetanus.	Pneumenia.
Puerperal Sepsis.	Diarrhœa.
Typhoid fever.	Dysentery.
Cholera.	Food poisoning.
Plague.	Leprosy.
	Tuberculosis.

(*g*) Bacteriology of air and soil water :—Sewage, milk.

II. *Viruses* :—

(a) Description and Morphology.

(b) Distribution and nature of transmission.

(c) Entry into host.

(d) Insect and animal hosts :—mosquito, sandfly, tick, dog, squirrel and mongoose.

(e) Methods of infection, of protection and disinfection in certain virus diseases :—

Common cold.	Chickenpox.	Mumps.
Influenza.	Sandfly fever.	Whooping cough.
Measles.	Dengue.	Tropical Typhus fevers.
Yellow fever.	Herpes.	Trachoma.
Smallpox.	Rabies.	

III. *Protozoa* :—

(*a*) Life-history of amœba and malarial parasites—Reproduction and spore formation.

(*b*) Method of infection and distribution.

(*c*) Common protozoal diseases :—Amœbic dysentery.
Malaria.
Kala-Azar.
Tropical ulcer (spirochaete).
Treponemata.
Syphilis.
Yaws.

Hosts :—man, insects, big game (trypanosome).

Practical :—

Moulds,
Yeasts,
Beneficial bacteria,

Pathogenic bacteria, viruses and protozoa shall be studied by lecture demonstrations and excursions to bacteriological institutes.

(ii) HYGIENE.

1. Houses and buildings—
   (a) Air and ventilation.
   (b) Water and milk supply.
   (c) Lighting.
   (d) Soil and surrounding gardens.
   (e) Drains and construction.
   (f) Disposal of refuse.
   (g) Disposal of human excreta.
   (h) Disposal of sewage.
   (i) Disposal of the dead.
   (j) Screening.
   (k) Markets.

2. The house in relation to the community—
   (a) Public health administration.
   1. History. 2. Survey of other countries. 3. India.
   (b) Village sanitation, roads, footpaths and wells.
   (c) Fairs and festival .

(d) Medical inspection of schools.

(e) Ante-natal, maternity and child-welfare, play-grounds and parks.

(f) Place and sphere of dispensaries and hospitals.

3. Climate and meteorology.

4. Personal Hygiene—(a) Food, (b) Clothing, (c) Exercise and (d) Mental hygiene.

5. First Aid—Prevention and treatment of burns, falls, drowning, motor accidents (road-sense).

Common poisons and their antidotes :—Lead, copper, mercury, arsenic, carbon-monoxide, opium (narcotine), tobacco (nicotine), dhatura, alcohol, oxalic acid, etc. Poisonous reptiles, scorpions, centipedes.

6. Prevention of disease :—

A. Methods of Infection :—

1. Water, air, milk, food.
2. Animal bites.
3. Insect transmission :—mosquito, sandfly, flies, fleas, bugs, ticks, mites and lice.

B. Public health methods of prevention of infection illustrated in the following diseases :—

Dysentery (amœbic, bacillary).	Smallpox.
	Measles.
Diarrhœa (adult, infants).	Whooping cough.
	Chickenpox.
Typhoid fever.	Plague.
Cholera.	Venereal diseases.
Dengue.	Malaria.
Typhus.	Diphtheria.
Puerperal fever.	Tuberculosis.
Tetanus.	Rabies.

C. Worm parasites :—

Cestodes, tapeworm, nematodes, roundworm, threadworm, hookworm, filaria, guineaworm.

1. Life-history.
2. Source and mode of infection.
3. Public health and household methods of prevention of infection.
4. Detection and treatment.

7. Restraint of infection :—

   (a) Individual and social conscience.
   (b) Notification.
   (c) Isolation.
   (d) Quarantine.
   (e) Immunity—1. Protective vaccines, and Sera.
   2. History and principles of plague, typhoid, smallpox, cholera, tetanus, etc.
   (f) Disinfection—theory and methods.
   (g) Disinfectants—natural, chemical.

8. Practical methods of Malarial Prevention :—

   (*a*) Study of life-history of Anophelus and Culex.
   (*b*) History of Malarial Prevention. Success in Malaya and Panama.
   (*c*) Methods, both local and geographical.
   (*d*) Protective means—

      i. Against adult infection—screening, bednets, sprays.

      ii. Municipal and village protection—drainage, Paris green, tilling, screening wells and cisterns, fish in wells and garden pools, adequate distribution of quinine, febrifuge, totaquin.

Practical work will be in the form of demonstrations and excursions.

III. PHYSIOLOGY AND NUTRITION.

(i) PHYSIOLOGY.

Theory :—

Histology of the tissues of the body.

Digestion. Nature and action of digestive juices and bile. Movements of alimentary tract. Absorption.

Essential facts of protein, carbohydrate and fat metabolism.

Respiration. The respiratory mechanism. Volumes of air breathed. Gaseous exchange in the lungs and tissues. Carriage of gases in the blood. Composition of expired and alveolar air. Regulation of respiration. Asphyxia.

Blood. Composition and functions. Blood Cells, Haemoglobin. Coagulation. Haemolysis. Blood forming organs. Factors in blood ormation. Chemistry of blood.

Circulation. Structure of heart. Cardiac cycle. Properties of cardiac muscle. Innervation and regulation of heart-beat. Flow of blood. Velocity. Pulse. Vasomotor control. Physiology of capillaries.

Lymph. Formation, circulation and functions.

Excretion. Composition and secretion of urine.

Skin. Structure and functions.

Body temperature and its regulation.

Endocrine organs. An elementary knowledge of the functions of the adrenal glands, pituitary, thyroid.

Neuro-muscular system. Structure and properties of muscle. Physical and chemical changes during contraction. Fatigue. Structure and functions of nerve fibres. The general structure of the central nervous system. Reflex action. The mechanism of voluntary movements and their co-ordination. The structure and physiology of the sense-organs.

Reproduction. The ovary. Development of Graafian follicle. Ovulation. Menstruation. Fertilization. Implantation. Pregnancy. Foetal membranes. Parturition. Mammary glands and lactation. Male reproductive organs. Internal secretions of the sex glands. Endocrine control of sex and reproduction.

Practical :—

Tissues—demonstrations of connective tissue, bone, muscle, nerve, kidney, epithelium of digestive and respiratory tract, skin, blood vessels, mammalian ovary.

Salivary digestion. Respiratory volumes.

Graphic record of respiration.

Blood cells; coagulation of blood; estimation of haemoglobin and method of blood count.

Circulation in the frog's web or tongue.

Heart-beat in the frog.

Human pulse and factors affecting it.

Blood pressure determination.

Tests of circulatory efficiency.

Urine analysis: specific gravity, qualitative tests: reaction, sugar, protein, phosphate.

24 hour urine—volume, specific gravity, reaction, total nitrogen.

Nerve-muscle, preparation in the frog with graphic records.

Study of spinal frog—reflex actions.

Human reflexes.

Demonstration of pregnant mammal and foetuses.

(ii) NUTRITION.

Theory :—

Methods of differentiating well nourished and poorly nourished groups.

Energy requirements of the body.

The calorie.

Factors influencing energy requirement.

Basal requirement and total requirement. Methods of measurement.

Energy value of foods.

Methods of measurement.

Physiological values.

Specific dynamic action.

Protein requirement.

Functions of protein.

Comparative value of various proteins.

Sources of protein and factors affecting its availability.

Protein intake. Nitrogen balance. Significance of nitrogenous constituents of urine. Minimum requirement and accepted standards of protein intake. Provision for protein under local conditions and within limited incomes.

Ash requirements.

Their functions; effects of deficiency.

Sources and availability.

Requirements.

Water balance.

Vitamins.

Discovery, methods of identification.

Relation to health.

Sources.

Effects of storage, commercial preparation, and cooking on food values.

Hygiene of the digestive tract.

Coefficients of digestibility.

Relation of nature of food to elimination of waste.

Factors influencing constipation.

Planning of an adequate diet.

Dietary habits in South India.

Adequate diets for limited incomes.

Invalid diets.

Practical:—

Basal metabolism determinations and comparison with prediction standards.

Estimation of individual total energy requirement.

Dietary study. Calculation from food analysis table of total calories protein, fat, carbohydrate, ash and vitamin content in local diet.

Animal feeding experiments with different qualities and quantities of protein.

Human balance experiments on different protein levels with urine analyses.

Animal experiments demonstrating effects of vitamin deficiency.

Planning and preparation of adequate diets under local conditions for pregnancy, lactation, infancy, childhood, for the family, on varied incomes.

NOTE.—It is expected that throughout this course constant application will be made to local conditions.

IV. APPLIED PHYSICAL SCIENCE.

(i) CHEMISTRY.

Inorganic Chemistry:—

A general knowledge of the ordinary methods of preparations and the chief properties of common elements—metals and non-metals—and their important compounds (same as dealt with in the Intermediate syllabus).

Water: rain, river, lake, well-waters, etc.
Mineral waters.
Organic impurities in water.
Methods of purification: for town supplies.
Domestic filters.
Hard and soft waters, Water softeners.

Physical Chemistry:—

The fundamental theories and principles dealt with in the Intermediate syllabus and in addition the following:—

The Law of Mass Action and its simple applications.
Catalysis and its applications.
Elementary notion of colloids.

Organic Chemistry:—

Isolation and purification and analysis of organic compounds.

Determination of molecular weights and the detection of structural formulae.

Classification of homologous series.
Isomerism: sterioisomerism.

Aliphatic series :—Preparation and properties of Methane, Ethylene; Acetylene; general chemistry of Petroleum and coal; coal and oil gas, by-products of gas Manufacture; methyl halides; Methyl alcohol; Ethyl-alcohol; Ether; Acetaldehyde; Acetone; Acetic acid (vinegar); Acetylchloride; Ethyl Acetate; Acetamide; Acetic anhydride; common fats and oils; soaps; Methyl Amine; Oxalic acid; Lactic acid; Tartaric acid; Citric acid; Glycerine; Nitroglycerine and Dynamite; Urea; Proteins; Glucose; Fructose; Cane sugar; Lactose; Maltose; Starch; Cellulose; Artificial silk; Celluloid; Gun-cotton.

Aromatic series :—Preparation and properties and constitution of Benzene, Toluene, Nitro-benzene, Aniline, Diazobodies. Azo dyes, Phenol, Benzyl alcohol, Benzaldehyde, Benzoic acid, Naphthalene.

Chemistry of Food :—

Knowledge of the general composition of common foods, such as, fish, meat, eggs, cholam, wheat, rice, soya bean, milk, butter and ghee.

Chief constituents of tea, coffee and cocoa.

Chemistry of dyeing and bleaching.

Microscopic characteristic of cotton, jute, silk and woollen fibres.

Paints, varnishes, polishes (metal and wood), marking ink, etc.

Practical Chemistry :—

Qualitative analysis of inorganic substances containing not more than one acid and one base from the following list :—

Sodium, Potassium, Silver, Calcium, Barium, Magnesium, Iron, Lead, Mercury, Copper, Tin, Zinc and the radical Ammonium.

Hydrochloric, Hydrobromic, Hydriodic, Nitric, Carbonic and Sulphuric Acids and Hydrogen sulphide.

Volumetric analysis :—Estimation involving simple applications of alkalimetry and acidimetry.

The detection of the following elements: Carbon, Hydrogen, Nitrogen, Sulphur and Halogens in an organic compound.

Identification of the following organic compounds :—Ethyl alcohol, Acetic acid, Chloroform, Glucose, Urea, Phenol.

Preparation of Iodoform, and preparation and hydrolysis of Ethyl acetate.

Extraction of one or two essential oils from natural sources.

Analysis of milk.

(ii) PHYSICS.

The course in Physics included in Home Science is intended to be of a general and popular nature requiring a knowledge of Elementary

Algebra and Trigonometry only. Thus the syllabus is to be regarded as extensive rather than intensive in scope.

General Properties of Matter :—

Units of physical quantities and their measurements.

Elasticity—strength of materials.

Bending and twisting of rods; rigidity; applications to beams, girders, and shafts.

Uniform circular motion; centrifugal and centripetal force.

Applications to centrifuges, engine governors, cream separators, drying cloths, etc.

Simple machines; system of pulleys, differential pulley, screw and wedge, principle of work.

Friction—sliding and rolling.

Surface tension and capillary phenomena.

Viscosity.

Diffusion and Osmosis.

Vacuum pumps and gauges; compression pumps.

Use of compressed air in various machinery and appliances, e.g., Westinghouse brake, pneumatic despatches, etc.

Liquids in motion; city water works; hydrants, faucets, gauges and meters; turbines.

Heat :—

Thermometry.

High and low temperature measurements.

Liquefaction of gases; liquid air.

Refrigerating machines and cold storage.

Humidity and weather; dew, fog, clouds, rain, snow, hail, etc.

Air conditioning and ventilation.

Conduction, convection and radiation of heat—Thermos flask, pressure cookers, fireless cookers, incubators.

Light :—

Intensity of illumination; lighting of rooms; foot candle meter.

Optical instruments—microscope, telescope.

Photography; motion pictures.

Spectra; colour; spectroscope; rainbows.

Electricity :—

Simple instruments for measurements of current, E.M.F., and resistance.

Electric power—heating and lighting; arc light, filament lamps, mercury arc, neon lighting.

Laws of electrolysis; application—electroplating.

Elementary knowledge of generators and motors—A.C. and D.C.

Applications—vacuum cleaners, tram cars, automobiles, etc.

Induction coils and transformers—microphone and telephone.

Distribution of electric power to houses; house wiring; fuses.

Calculation of electric power consumed.

Cathode rays and X-rays; radio activity.

Elements of radio.

Practical Physics :—

Properties of Matter :—

Balance—curve of sensitiveness, weighing by method of Gauss.

Young's Modulus by bending and stretching.

Modulus of Torsion.

Heat :—

Specific heat of solids, liquids with radiation correction.

Latent heats.

Conductivity of good conductors.

Mechanical equivalent of heat.

Vapour density measurements.

Light :—

Photometry—comparing power of various lamps by different methods and calculating their efficiency and power consumed.

Refractive index of a liquid with microscope.

Refractive index of a prism by spectrometer.

Electricity :—

Absolute determination of current.

Specific resistance with Post Office Box.

Variation of resistance with temperature.

Comparison of E.M.F 's with Potentiometer.

Comparison of resistance with Potentiometer.

Calibration of Ammeter by Potentiometer.

Calibration of Volt-meter by Potentiometer.

Electro-chemical equivalent of copper.

Electrical determination of mechanical equivalent of heat.

In addition to the above list of routine experiments, the course should cover a few exercises on the following :—

Electro-plating.

General laboratory technique such as soldering, tinning of metal-ware, etc.

Text-Books for the B. A. Degree Examinations, 1949.

ENGLISH.

1949.

Shakespeare.—Much ado about Nothing. Antony and Cleopatra.

Poetry: Great English Poems, Ed. C.B. Young (O.U.P.) the following selections :—

(1) Lycidas (2) MacFlecknoe (3) Lines on Tintern Abbey (4) Immortality Ode (5) Christabel Part I only (6) Ode to the West Wind (7) Adonais (8) Rabbi Ben Ezra (9) The Great Lover (10) Strange Meeting.

Prose for detailed study.—(1) Burke—Bristol Address and Letter to the Sheriffs of Bristol· (2) Arnold—Selections, Ed. Campagnac, (Macmillan). (3) Longer Specimens of Modern English Prose, omitting De Senectute (O. U. P.)

Prose for Non-detailed study.—(1) Trollope—The Last Chronicle of Barset. (2) Modern Short Stories—Scholar's Library, Macmillan. (3) J. S. Hoyland—Gopal Krishna Gokhale (Y.M.C.A. Publishing House, Calcutta).

SANSKRIT.

1949.

PART II.

1. Sakuntala (Nirnayasagara Press).
2. Meghadūta of Kalidāsa (whole).
3. Bana's Harshacharita, VI Ucchvasa.
4. Vamana's Kāyalankārasutravrtti (Vanivilasam Press, (Srirangam) I and IV Adhikaranas).

Grammar.—

For Grammar taught with reference to the prescribed text-books, Apte's Guide to Sanskrit Composition and Kale's Junior Sanskrit Grammar may be consulted.

History of Literature.—

In connexion with the History of Sanskrit Literature, a detailed study of Macdonell's History of Sanskrit Literature, Chapters X to XIV and the whole of Keith's Classical Sanskrit Literature (Heritage of India Series) is recommended.

PART III—GROUP (v).

(*a*) A. A. Macdonell: Vedic Reader; the following selections:—

Agni, I—1.

Savitr, I—35.

Maruts, I—85.

Viṣṇu, I—154.

Funeral Hymn, X—14.

Pitaras, X—15.

Gambler, X—34.

Yama, X—135.

Aitareya-brāhmaṇa, VII—iii and iv.

Gautama Dharma Sūtra—Text only—Praṣna I corresponding to Chapters I to IX—Bibliotheca Sanskrita. (Government Press, Mysore or Anandasrama Press, Poona).

Kaṭhopaniṣhad—First Adhyāya: (Text only).

(*b*) Ṣākuntala.

Bhaṭṭanarayana's Veṇisaṁhāra.

Bāṇa: Harsacarita, Ucchvāsa III. (Nirnaya Sagara Press, Bombay).

Patañjali: Mahābhāṣya, I, i, i.

Mahabhārata—Prajāgaraparva (Chapters 33—40, both inclusive) in the Ṵdyogaparva, according to T. R. Krishnamacharya's edition or the Guzarati Printing Press edition, Bombay.

Nilakaṇtha Vijaya by Nilakaṇtha Dikṣita, Ucchvāsa I only. (The Proprietor, Balamanorama Press, Mylapore, Madras).

(*c*) History of Sanskrit Literature.—

Books recommended for Study.—

Macdonell's "History of Sanskrit Literature" and 'India's Past.'

Keith's Classical Sanskrit Literature—Heritage of India Series.

Related Language.—

Sākuntala.

Raghuvaṁs'a—Cantos IV and VI.

Cognate Subject.—

Early History of India to the beginning of the present era (*i.e.* Christian era).

Books recommended.—

E. J. Rapson: Ancient India. (Cambridge University Press).
V. A. Smith: Early History of India.
Macdonell's 'India's Past.'

MARATHI.

1949.

PART II AND PART III—GROUP (v).

Non-detailed Study: Sanskriti Sangam by D.K. Kelkar.

Detailed Study:

Prose: (1) Ulka by Khandekar.
(2) Balidan by N.C. Kelkar.

Poetry.—

1. Moropant—Karna Parva—Adhyayas 20 to 30, both inclusive.
2. Bandi Shala by Yeshwant.

Drama.—

Punyaprabhav by Gadkari.

Grammar and Prosody.—

Taught with reference to the prescribed texts.

History of Language and Literature.—

1. Maharashtra Saraswatas—Part II—Essays on Vaman Pandit, Nagesh, Vithal and Moropant.
2. Bhasha Shastra va Marathi Bhasha by K. P. Kulkarni, Chapters X and XI.

HINDI.

1949.

PART II.

Poetry.—(1) Kavyakanan (Published by Motilal Benarasidas), Poems of Kabirdas, Tulsidas, Rahim, Surdas, Ayodhyasinh Upadhyay, Sumitranandan Pant and Mahadevi Varma only *or* Madhuvan (D. B. H. P.Sabha, Madras). (2) Kunalgit by Maithilisaran Gupt *or* Pathik by Ramnares Tripathi).

Prose.—

Hindi Madhuri, Part III (omitting essays numbers 3, 4, 12, 14 and 17) (published by D. B. Hindi Prachar Sabha, Madras).

Drama: Chandragupt by D. L. Roy. (Hindi Grandh Ratnakar Karyalaya, Bombay).

Non-detailed:

(1) Nirmala by Premchand.

(2) Madhu Manjari (D. B. Hindi Prachar Sabha, Madras).

(3) Bapu by G. D. Birla. (Sasta Sahitya Mandal, Delhi).

History of Language and Literature.—Hindi Sahitya Ka Subodh Itihas by Gulab Rai.

Grammar:

Vyakarana Tatva Prakash (Indian Press, Allahabad).

PART III—GROUP (v).

I. *Poetry (Ancient and Modern)*.—

1. Manas Manjari. Published by Ram Narayan Lal, Allahabad.
2. Sur-Sukti-Sudha (Edited by Viyogi Hari and published by Motilal Benarasidas, Lahore).
3. Bihari Sangrah. Published by Hindi Sahitya Sammelan, Prayag.
4. Chayanika. Published by D. B. Hindi Prachar Sabha, Madras, *omitting* Maithilisaran Gupt and Kalakujan.
5. Sidharaj—Maithilisaran Gupt. (Sahitya Sadan, Chirganv).
6. Harischandra—Jagannathdas Ratnakar (Indian Press, Ltd., Allahabad).
7. Ansu by Jaishankar Prasad, (Leader Press).

II. *Prose*.—

1. Ashtachhap. Edited by Dhirendra Varma. First 69 pages.
2. Hindi Gadya Nirman (Edited by Lakshmidhar Vajapai and published by Hindi Sahitya Sammelan, Prayag).
3. Suman Sanchya (Hindi Bhavan).
4. Karma-bhumi (Premchand), published by Saraswati Press, Benares.
5. Bhagya Chakr (Sudarsan).
6. Bharatendu Harischandra by Syam Sundar Das, (Indian Press, Ltd., Allahabad).

III. *History of Language and Literature.—*

1. Hindi Bhasha aur Sahitya by Syam Sundar Das, (N. P. Sabha, Benares).

2. Hindi Sahitya ka Alochanatmak Ithihas—Ramkumar Varma. (Ram Narayan Lal, Allahabad).

3. Sahitya Prakas—Ramsankar Sukl "Rasal" (Indian Press, Ltd., Allahabad).

4. Hindi par Farsi ka Prabhav—Ambika Prasad Vajapai. (Hindi, Sahitya Sammelan, Allahabad).

IV. *Grammar, Rhetoric and Prosody.—*

1. Vyakaran Pradip by Ramdev (Sahitya Mandir, Lahore).

2. Vyakaran Chandrodaya by Ramalochan Saran. (Hindi Pustak Bhandar, Darbhanga).

3. Kavya Pradip by Pt. Rambahori Sukl (Hindi Bhavan, Lahore).

4. Bhasha Vijayan by Syam Sunder Das (Indian Press Ltd., Allahabad) (for reference only).

V. 1. Prabandh Probhakar by Gulabrai (Hindi Bhavan), (for reference only).

2. Sahitya Siksha (Hindi Granth Ratnakar Karyalaya, Girgaum, Bombay), (for reference only).

VI. *Sanskrit.—*

Same as for the Dravidian Languages.

VII. *Cognate subject.—*

Indian History—Muslim Period.

Text-book.—

A History of Muslim Rule in India by Ishwari Prasad (Indian Press, Ltd., Allahabad).

Note: (*a*) The teaching will be done in English and not in Hindi:
(*b*) The examination will be conducted in English and the Board of Paper-Setters in History will set the Paper for Hindi students as for Urdu students who take up the Muslim Period, to secure uniformity of standard; and

(c) the paper set will be divided into two parts—Part I extending from 1000 A. D. to 1526 A. D. and Part II from 1526 to 1707 A. D., and it will be an instruction (1) to Hindi candidates to select 5 questions with not less than two from each part, and (2) to Urdu candidates that they should select any five questions from Part II only.

BENGALI.

1949.

PART II.

Bankim Chandra Chatterjee	... Krishnakanter Bil.
Madhusudan Dutt	... Meghath Badh (Canto VII).
Sir Ashtosh Mukherjee	... Jatiya Sahitya (Selected Pieces).
Rabindranath Tagore	... Chitra.
Samalochana Sangraha	... (Published by the Calcutta University).

The following are recommended as showing the standard up to which candidates are expected to have read :—

Sivanath Sastri	... Ramtanu Lahiri-o-Tatkalin Bangla Samaj.
Ramendra Sundar Trivedi	... Nana Katha.
Rabindranath Tagore	... Jivan Smriti.
Bhudev Mukherjee	... Vividha Prabandha.
Mohitlal Majumdar	... Adhunik Bangla Sahitya.
Pramatha Chaudhuri	... Char-Yani-Katha.
Sarat Chandra Chatterjee	... Palli Samaj.
Rabindranath Tagore	... Collection of Bagiswami Lecture.

The following books are recommended for study of History of Bengali Literature :—

Suniti Kumar Chatterji	... Bangla Bhasatattver Bhumika. (Calcutta University).
Sukumar Sen	... Bangla Sahityer Katha.
Mohitlal Majumdar	... Sahitya Katha

LATIN.

1949.

PART II.

Vergil : Book VI.

Tacitus : Annals Book I.

Horace : Odes, Book I.

Cicero : Pro Roscio.

Part III—GROUP (V).

Vergil : Aeneid, Book IX.

Lucretius : Book V.

Cicero : Pro Lege Manilia.

Livy : Books XXI and XXII.

Tacitus : Agricola and Germania.

Juvenal : Satires VII and X.

Cognate Subject : History of Rome from the death of Marius to the death of Augustus (86 B.C. to 14 A.D.).

B.A. DEGREE EXAMINATION, 1949

FRENCH.

1949.

Part II.

Henri Bordeaux : La Maison (Heath).

Corneille : Le Cid.

Pierre Loti : Pechuer d'Islande (Heath).

Watson Bain's French Poetry for Students, Nos. 40 to 70 (Macmillan).

PART III—GROUP (V).

Oxford Book of French Verse (13th to 20th Century) : Selections from Pierre Corneille (Nos. 146 to the end of the book).

H. Bordeaux ; Le Barrage.

E.C. Hills and M. Dondo : La France, son histoire sa civilisation. (Harrap).

La Bruyere : Les Caracteres. (Nelson).

Corneille : Polyeucte.

Moliere : Bourgeois Gentilhomme.

The following books are recommended for consultation :—

Ch. Desgranges : Historie illustree de la literature francaise. (Hatier, Paris.)

F. Brunot : Precis de grammaire histiorique de la langue francaise. (New Edition, 1933).

A. Darmesteter : Course de grammaire historique de la langue francaise.

A. Dauzat : Histoire de la langue francaise.

(All the above books may be ordered through Blackwell, Oxford).

Cognate Subject :—France in the 17th Century, Cambridge Modern History, Vol. V, Chapters I, II, III, and XIV.

GERMAN.

1949.

PART II.

Kleist : Kathchen Von Heilbronn.

Scheffel : Ekkehard (Harrap).

Chamisso : Peter Schlemihl (O. U. P.).

Fiedler : A book of German Verse, Nos. 10, 42, 45, 46, 63, 71, 74, 92, 94, 122 (O.C.P.).

PART III—GROUP (V).

Goethe : Egmont.

J. Ponton : Volk auf den wege (Blackwell).

Florsted-Stieber : Heue deutsche Sprachlehre. (Verlag Moritz Diester-weg Frankfurt A. M).

Konrad Ferdinand Meyer : Jurg Jenatsch (Macmillan).

Oxford book of German Verse : Nos. 7, 13, 27, 35, 38, 41-46, 48-51, 60, 61, 63, 65-68, 70, 75, 78, 93, 95, 106, 109-112, 118, 139, 141, 142, 178, 182, 189, 192, 198, 214, 220, 221, 226, 232, 237, and 240.

Cognate Subject:—Cambridge Modern History, Book I, cc. 3, 6, 7.

HEBREW.

1949.

PART II.

1. The Book of Ruth.
2. The Book of Joshua, Chapters 1 to XV.
3. History of Hebrew Literature.

Grammar.—

1. Students' Hebrew Grammar—Rev. Michael Adler—David Nutt, London.
2. Davidson : Hebrew Grammar.

PART III—GROUP (v).

1. Deuteronomy—Chapters I—XX.
2. Mishna Tract Abboth (whole).
3. Ezekiel—Chapters I to XX.

COGNATE SUBJECT.

History of the Hebrew Literature.

History of the Jews—by Gratz (Nazin & Co., London).

Grammar.—

Davidson : Hebrew Grammar.

Davidson : Hebrew Syntax.

S. R. Driver : Hebrew Tenses.

SYRIAC.

1949.

PART II.

(1) The Gospel of St. John.

(2) The Breviary of the Syro-Chaldean Catholics of Malabar for Wednesday *or* the Breviary of the Syro-Malankara Catholics or Jacobites for Wednesday.

(3) The History of the Syrian Church in India.

(4) The History of Syriac Literature by Dr. Wright. (A. & C. Blac , London).

Grammar.—A Compendious Syriac Grammar by Noldeke (Williams Norgate, Ltd., 36, Great Russell Street, London, W. C. 1).

The following books are recommended for the study of the History of Syrian Church in India :—

(1) The Mar Thoma Christians, Vols. I and II by Rev. Fr. Bernard, T.O.C.D. (St. Joseph's Press, Mannanam P.O., Travancore).

(2) The Indian Church of St. Thomas by Mr. E. M. Philip. (C.M.S. Press, Kottayam).

(3) The Syrian Church of Malabar and its Cultural Contributions by Rev. Fr. Placid, T.O.C.D., PH.D., D.D., D.C.L., and K. E. Job, Esq., M.A.L.T. (St. Joseph's Press, Mannanam P.O., Travancore).

(4) St. Thomas, the Apostle in India by F. A. D'Cruz, K.S.G., (Hoe & Co., Madras).

PART III—GROUP (V).

(1) The Gospel of St. Luke.

(2) The Epistle to the Romans.

(3) The Breviary of the Syro-Chaldean Catholics of Malabar, (St. Joseph's Press, Mannanam P.O., Kottayam, Travancore) *or* The Breviary of the Syro-Malankara Catholics or Jacobites. (St. Joseph's Press, Tiruvella (Travancore).

(4) The History of Syriac Literature by Dr. Wright. (A. & C. Black, London.)

(5) The History of the Syriac Language.

(6) The History of the Syrian Church in India.

Grammar.—A Compendious Syriac Grammar by Noldeke, (Williams Norgate, Ltd., 36, Great Russell St., London, W. C. 1).

The following books are recommended for the study of the History of the Syrian Church in India :—

(1) India and the Apostle St. Thomas by A. E. Medlycott. (David Nutt, 57-59, Long Acre, London).

(2) Antiquities from San Thome and Mylapore by Rev. Fr. H. Hosten, S. J. (Baptist Mission Press, Ranchi *or* the Vicar-General. The Bishop's House, Mylapore, Madras).

(3) Christianity in India by Mackenzie. (Government Press, Trivandrum).

(4) The Mar Thoma Christians, Vols. I and II, by Rev. Fr. Bernard, T.O.C.D. (St. Joseph's Press, Mannanam P.O., Travancore).

(5) The Indian Church of St. Thomas by E. M. Philip. (C.M.S. Press, Kottayam P.O., Travancore).

(6) The Syrian Church of Malabar and its Cultural Contributions by Rev. Fr. Placid, T.O.C.D, PH.D., D.D., D.C.L., and K.E. Job, Esq., M.A., L.T., (St. Joseph's Press, Mannanam P.O., Travancore).

(7) St. Thomas, the Apostle in India by F. A. D'Cruz, K.S.G., (Hoe & Co., Madras).

ARABIC.

1949.

PART II.

Prose and Poetry.—

Majaniul-adab—Volume II.

Surah-i-Maryam.

Grammar, etc.—

Thatcher's Arabic Grammar or Asas-i- Arabi.

History of Arabic Literature.—

Arabic Literature in the first two centuries of Islam.

Book recommended.—

History of Arabic Literature by H. A. R. Gibb.

PART III—GROUP (V).

Prose.—

Maqamat-al-Hariri-Maqamats 1 and 2.
Maqamat-i-Badiuz-Zaman-Maqamats 1 to 2.
Surat-al-Shura.
Surah-i-Luqman.
Maqaddama-Ibn-Khaldun—Chapter VI—first 10 sections.

Poetry.—

Al-Mutanabbi-Radif Alif only.
Muallaqat-Zuhayr.
Qasida Banat Su'ad.
Al-Hamasa. Babul Hamasa—First seven poems.

Non-detailed.—

'Abdur Rahman-al-Nasir by Jurji Zaidan.

Books recommended for Grammar and History of Literature:—

Palmer's Arabic Grammar.
The Literary History of the Arabs by Nicholson.

Related Subject.—

First four Caliphs and the Umayyads.

PERSIAN.

1949.

PART II.

Prose.—

Siyahat Nameh-i-Ibrahim Beg—First 70 pages (Calcutta Edition)-
Intikhabi—Anwar-i-Suhayli 1st and 2nd chapters with introduction by Ja'fari.

Poetry.—

Pas-che Payad Kard by Iqbal.

Shahid-i-Nazm by Ja'fari.

History of Persian Literature.—

Nineteenth Century Persian Literature by Levy.

PART III—GROUP (V).

Prose.—

Qissah-i-Haji Baba Isfahani (1st quarter).

Romeo and Juliet by Ali Asghgar Hikmat.

Sukhanwaran-i-Iran Dar Asr-i-Hazir—Vol.I—1st Half (by Dr. Ishaq).

Sih Nathr by Zuhuri— 1st Nathr.

Abul-Fazl—First four letters of the 1st Daftar.

Poetry.—

Rumuz-i-Bay Khudi by Iqbal.

Qasayid-i-Khaqani—1st twelve Qasidahs.

Mathnawi-Rumi—Ist quarter of the 1st Daftar.

Ruba'-iyat—Khayyam.

Grammar.—

Persian Grammar by Platts.

History of Literature.—

History of Persian Literature by Brown—Vol. III.

Related subject for *Arabic and Persian :*

The first four Caliphs and the Umayyad Period.

URDU.

1949.

PART II.

Prose.—

Mazamin-i-Farhat—Part I.

Pazmi-Akbar published by Anjuman.

Poetry.—

Bang-i-Dira—Poems written after 1908.

Drama.—

Pardah-i-Ghaflat.

Non-detailed.—

Chand Ham 'Asar.
Almamun by Shibli.

History of Literature.—

Development of Prose after 1858.
Urdu Literature by Graham Bailey.

PART III—GROUP (V).

Prose and Drama.—

Hamari-Sha'iri Mas'ud-Hasan.
Nuqushi-Sulaymani by Mawlana Sayyid Sulayman Nadwi.
Natan by Naimur-Rahman.

Poetry.—

Ab-i-Hayat excluding Introduction and the History of Urdu Literature.
Armughani-Hijaz by Dr. Sir Muhammad Iqbal—Urdu portion only.
Subhi-Watan by Chakbast.

Grammar.—

Qawaid-i-Urdu by Abdul Haq.
Tahsilul-Balaghat.
History of Urdu Literature by Saksina *or* its Urdu version by Mirza Askari.

Related subject.—

History of India from 1526 to 1707.

TAMIL,

1949.

PART II.

Poetical Selections (Published by the University):—

(1) Porunar Arruppadai—248 lines.
(2) Kambaramayanam—Vibhishanan Adaikala Padalam—300 lines.
(3) Cilapadhikaram—Indira Vilavuretutta Kadai—219 lines.
(4) Kuruntokai—50 lines.

(5) Sirappuranam—Nabi Avatara Padalam—100 lines.
(6) Alagar Kalambakam—40 lines.
(7) Tirukkural—Chapters 78 to 84—140 lines.
(8) Chintamani—Kandarva Tattaiyar Ilambakam—240 lines.
(9) Purananuru—100 lines.
(10) Periyapuranam—Kannappar—160 lines.

Detailed Prose.—(1) Kambar—By T. Celvakesavaraya Mudaliar, Perambur. (2) Mannavar Nitiyum Mangaiyar Manpum—By K. Balasundara Mudaliyar, S. S. Vasan Company, Mylapore.

Non-detailed Prose.—(1) Sekkilar—By M. Rajamanikkam Pillai, Educational Publishing Company, Thyagarayanagar, Madras. (2) Urimaium Katamaiyum (omitting Manimekhalaium Aval Samayamum)—By M. Radhakrishna Pillai, Alliance Company, Brodies Road, Mylapore, Madras.

PART III—GROUP (V).

Poetry.—

1. Perumpanarruppadai.
2. Ainkurunuru.
3. Purananuru, pages 74—96. Stanzas 1 to 24 omitting Stanza 14.
4. Muttollayiram.
5. Tirukkural, Chapters 11—20.
6. Cilappadikaram. pp. 259—275. (1) Mangalavalthu, (2) Manai-aram-padutta Katai—omitting lines 29 to 35 and 60 to 70. (3) Indra Vila Vedutta Kadai—omitting lines 1, 2 and 189—235.

(Items 1–6: University B.A. Selections, Vol. I.)

7. Kambaramayanam: Sundara-kandam.
8. Tiruttondar-puranam. Tiru-nalaipovar.
9. Tiruviruttam.

(Items 7–9: University B. A. Selections Vol. II.)

Prose.—

1. Tamil Varalaru—K. Srinivasa Pillai, Parts I and II.
2. Kapilar—Madras University Publication.

Grammar.—

1. Nannul—Sankaranamaccivayar Urai.
2. Yappilakkanavinavidai by Visakaperumal Ayyar.

TELUGU.

1949.

PART II.

Old Poetry.— (1) Bharatam, Asramavasaparvam, Canto I (whole) 186 verses.

(2) Amuktamalyada Canto 3: "Khandikya Kesidhwaja Samvadam" 76 Verses.

(3) Kalahastimahatmyam, Canto 3: "Natkiruni Katha" 92 verses.

Modern Poetry.— (4) Ashtavakra Charitra by Bulusu Venkateswarlu, Telugu Lexicon Office, Suryaraopet, Cocanada.

Drama.— (5) Malati Madhavam by Janamanchi Venkataramiah, No. 1, Lalithapuram St., Royapettah, Madras.

Prose.—Essays in Telugu by Munimanikyam Narasimha Rao, Bhaskarapuram, Masulipatam.

Non-detailed.—(1) Thyagamahima by Baladari Veeranarayana Deo, Rajahmundry, and (2) (*a*) Sapam by Chilakamarti Lakshminarasimham, Tirupati Venkateswara Book Depot, Rajahmundry—or (2) (*b*) [if 2 (*a*) is not available] Vasumati vasantam by Venkata, parvateesakavulu.

SYLLABUS IN TELUGU GRAMMAR, PROSODY AND POETICS UNDER PART II.

To the syllabus prescribed for the Intermediate Examination *add* the following :—

GRAMMAR.

1. Classification of Telugu words—Tatsama, Tadbhava, Desya (Andhra Desya and Anya Desya). Gramya, Anindya gramya. Their characteristic features.

2. Sandhi—Sanskrit—The chapter on Halsandhi in Tatsama Chandrika (by Sannidhanam Suryanarayana Sastry).

3. Compounds—Classification : (1) Siddha, (2) Sadhya, (3) Tatpurusha, (4) Dwandwa, (5) Bahuvrihi.

PROSODY.

To the Intermediate syllabus *add* the following :—

4. The characteristic features of the metres occurring in Text-books prescribed.

POETICS.

5. (i) (*a*) Sabdalankara—Anuprasa—Yamaka—Muktapadagrasta.
(i) (*b*) Arthalamkara—Ullekha, Lokokti, Slesha, Vyajastuti, Samasokti,

Kavyalinga, Visama and Arthapatti. (ii) Kavyalakshana—Classification; Drisya, Sravya, Khanda, Mahakavya and Kshudrakavya. (iii) Rasa—its characteristic features. (iv) Hero and Heroine—Their classification. (v) Kavyadoshas and Gunas.

PART III—GROUP (v).

Poetry (Old).—

1. Kalapurnodayam—Canto 4, verses 1—151.
2. Raghavapandaviyam with Kavibhavaprakasika Commentary Canto 4.
3. Amuktamalyada, canto 6, verses 1—66.
4. Nilasundariparinayamu by Kuchimanchi Timmakavi.

Poetry (Modern).—

1. Panasala by Duvvuri Rami Reddi, Pemmareddipalem, Ellayapalem Post, Nellore District.
2. Kamavilasamu by S. V. Sastri, Telugu Lecturer, The Nizam College, Hyderabad, Deccan.

Drama.—

1. Ascharyachudamani by M. Viswanatha Sarma. M. R. College, Vizianagaram.
2. Uttararamacharitra by Malladi Suryanarayana Sastri, Agraharam, Dowleswaram Post, East Godavari.

Prose.—

1. Nayapradeepam, pages 1—30 by Korada Ramachandra Sastri, (with commentary by D. V. Krishnamurti, M. A.), 28 Singarachari Street, Triplicane, Madras.
2. A Critique on Nannechoda's Kumarasambhavamu—Madras University Publication.
3. Amaravati Stupamulu by M. Somasekhara Sarma, Andhra University College of Arts, Guntur.

Inscriptions.—

Sasanapadyamanjari—1 to 10 Sasanas, edited by Jayanti Ramayya Pantulu, Telugu Academy Office, Coconada.

Literary Criticism.—

1. Sahityatatva Vimarsanam by J. Satyanarayanamurti, No. 3, Luz, Mylapore, Madras.
2. Andhrabharatakavita Vimarsanamu (Chapters 3 and 4) by K. Ramakrishniah, M. A. No. 28, Singarachari Street, Triplicane, Madras.

History of Language and Literature.—

1. Sandhi, Madras University Publication.

2. Dravida Bhashalu by G. J. Somayaji, University College, Guntur.

3. Andhra Vangmaya Charitra Sangraham by K. Venkatanarayana Rao, published by Vavilla Ramaswamy Sastrulu & Sons, Madras.

Grammar, Prosody and Poetics.—

1. Balavyakaranam.
2. Praudhavyakaranam.
3. Appakaviyam, Cantos 3 and 4.
4. Narasabhupaleeyam.
5. Dasarupakam, translated by Malladi Suryanarayana Sastri, Agraharam, Dowleswaram Post, East Godavari District.
6. Chandassastramu by T. Rajagopala Rao.

KANNADA.

1949.

PART II.

Old Poetry.—(1) Pampa Bharata: 12th Aswasa. (2) Girija Kalyana: 9th and 10th Aswasas.

Modern Poetry.—Sri Vamana Avatara; Sandhis 4 and 5 (Stanzas 96) (Sri P. S. Sastri, Sri Sankara Vijaya Karyalaya, Mysore).

Old Prose.—Ramaswamedha (Muddana)—Chapters 1 to 5.

Modern Prose.—Karnataka Gata Vaibhava (V. B. Alur, Author, Dharwar),

Drama.—Sakuntala by Basappa Sastry.

Grammar.—Kannada Kaipidi, Vol. I, Part I (Revised Edition). Portions relating to Grammar only (Mysore University Publication).

History of Literature.—Karnataka Kavi Carite, Volume I, by R. Narasimhachari. Introduction and an account of the following authors together with those of the prescribed texts: Ponna, Rudra Bhatta, Raghavanka, Kumara Vyasa, Chikupadhyaya.

Non-detailed Texts.—(i) Visa Vriksa (B. Venkatachar)—(Satya-Sodhana Book Depot, Bangalore). (ii) Bettada Jeeva (K. S. Karanth, Puttur, South Kanara).

PART III—GROUP (v)

Poetry (Old)—

1. Pushpadanta Purana by Gunavarma II, Aswasas 1, 2 and 3, (Madras University Publication).
2. Sasana Padya Manjari by Rao Bahadur R. Narasimhacharya. (Copies can be had from R. A. Tirunarayana Ayyangar, son of the late Mr. R. Narasimhacharyar, Malleswaram P.O., Bangalore City).

Prose (Old).—

Ramaswamedha by Muddana. Aswasas 8 to the end (Kavya Kalanidhi Office, Mysore).

Modern Prose.—

1. Marali Mannige by K. S. Karanth, Puttur.
2. Jivana Soundarya and Sahitya by D. V. Gundappa. (Copies can be had from the Karnataka Publishing House, Basavangudi P. O., Bangalore City).

Drama.—

1. Venisamhara Nataka by Pandit Jayarayacharya.
2. Tapobala by A. N. Narasimhayya (Satya Sodhana Book Depot, Fort, Bangalore City).

Grammar.—

Sabdamanidarpana by Kesiraja (Madras University Publication).

Prosody and Poetics.—

1. Chhandombudhi by Nagavarma (Basel Mission Book Depot, Mangalore).
2. Kavirajamarga (Madras University Publication).
3. Rasaratnakara by Salwa (Madras University Publication).

History of Literature.—

Karnataka Kavicharite by R. Narasimhachariyar, Vol. I, (Revised Edition). Introduction and writers of the 11th and 12th centuries. (Copies can be had from R. A. Tirunarayana Ayyangar, son of the late R. Narasimhacharya, Malleswaram P.O., Bangalore City).

History of Language.—

1. History of Kannada Language by R. Narasimhachariyar, (Mysore University Publication).
2. Kannada Kaipidi, Vol. I (Revised Edition), Part IV, portions relating to the History of Kannada Language. (Mysore University Publication).

Dravidian Comparative Grammar.—

Comparative Grammar of the Dravidian Languages by Dr. Caldwell (3rd and Revised Edition).

Non-detailed study for composition.—

1. Vimarse, Parts I and II by M. Venkatesa Ayyangar, (Viswakarnataka Book Depot, Visweswarapuram, Bangalore City).
2. Vritta Patrike by D. V. Gundappa (Karnataka Publishing House, Basavangudi P. O., Bangalore City).

MALAYALAM.

PART II.

Non-detailed study.—(1) Premamritam by C.V. Raman Pillai—City Press, Trivandrum. (2) Shahjehan, R. C. Sarma, High School, Narakkal, Cochin State.

Detailed study.—

Poetry.—(1) Krishna gatha—Soubhadrikatha—Cherusseri. Any Press. (2) Bharatham—Virata Parvam—Ezuttaccan. Any Press. (3) Umakeralam—11th Sargam—Ulloor S. Parameswara Ayyar, Jagadi, Trivandrum. (4) Kesaviyam—1st Sargam by K. C. Kesava Pillai—(Vidyabhivardhini Press, Quilon). (5) Chandala Bhikshuki, Asan, Chakkey, Trivandrum).

Kathakali—(6) Nalacaritam Attakkatha—3rd Day's Play—Unnai Warriyar. Any Press.

Drama.—(7) Sakuntalam—Vallathole—Cheruthuruthi, Cochin State.

Prose.—(1) Prabhanda Sangraham—Selections 1, 2, 3, 6 and 13 to 16 by A. R. Raja Raja Varma, Kamalalaya Book Depot, Trivandrum. (2) Sahitya Panchananan by D. K. Parameswaran Nayar, Transport Office, Trivandrum.

PART III—GROUP (V).

Old Poetry.—

1. Rama Charitam—12 to 20 patalams (University Publication).
2. Kannassa Ramayanam — Aranya Kandam by Kannassan (Selections in Malayalam Poetry for B. A. Degree Examination, Volume I, Part II, University Publication).
3. Krishnagata — Rukminiswayamvaram, by Cherusseri (any Press).

Modern Poetry.—

1. Desaman Kilippattu, by Porayannur Nambudripad, Bharata Vilasam Press, High Road, Trichur.
2. Kalakeya Vadham—(Attakatha,) by Kottayath Thampuran.
3. Rugmangada Caritam, 1 to 5 Sargams, by Pantalam Kerala Varma Tampuran, S. R. Book Depot, Trivandrum.
4. Nalu Bhasha Kavyangal, by Kundoor Narayana Menon, (B. V. Book Depot, Trivandrum).

Drama.—

Ascaryacudamani, by Kunhukuttan Thampuran. (Mangalodayam Press, Trichur).

Prose.—

1. Bhutarayar, Appan Tampuran, c/o V. M. Kutti Krishna Menon, Kumara Mandiram, Ayyanthole, Trichur.
2. Khandakatha Prasthanam by M. P. Paul, St. Mary's Orphanage Press, Trichur.
3. Uttararamayanam, Gadyam—Volume I. (Malayalam Improvement Committee, Maharajah's College, Ernakulam).

Text-books for the Examination of 1950.

ENGLISH.

1950.

Shakespeare.—Hamlet ; Much ado about Nothing.

Poetry.—

Milton—Paradise Lost, Book IX.
Wordsworth—The Prelude—Book I—lines 356 to the end.
Keats—To a Nightingale.
Browning—An Epistle of Karshish.
Bridges—A Passer-By.
Sturge Moore—The Gazelles.

Prose for Detailed Study.—

(1) Johnson—Life of Milton.

(2) Carlyle—Selections from the French Revolution. Hemingway and Seymour (D. C. Heath & Co.).

(3) Longer Specimens of Modern English—omitting *De Senectute* (O.U.P.).

Prose for Non-detailed Study.—

(1) Thackeray—Esmond.
(2) M. R. Ridley—Abraham Lincoln (Blackie & Son).
(3) Tagore—Home and the World (Macmillan).

SANSKRIT.

1950.

PART II.

The same as for 1949 except that for Mēghasandesa, Māgha Canto (2) is substituted.

PART III—GROUP (v)

The same as for 1949.

Related Language.

The same as for 1949.

MARATHI.

1950.

Non-detailed: The same as for 1949.

Detailed Prose:

Ulka by Khandekar.
Ekawali by S. N. Banahatti—Pages 1 to 153 only.

Poetry: The same as for 1949.
Drama: Bhavabhandhan by Gadakari.
Grammar and History of Language and Literature: The same as for 1949.

PART III—GROUP (v)

The same as for 1949.

HINDI.

1950.

PART II AND PART III—GROUP (v).

The same as for 1949.

LATIN.

1950.

PART II.

Vergil: Aeneid. Book VII.
Tacitus: Annals. Book 1.
Horace: Odes. Book I.
Cicero: De Senectute.

FRENCH.

1950.

PART II.

Henri Bordeaux: La Maison. (Heath).
Corneille: Le Cid.
Pierre Loti: Pecheur d'Islande. (Heath).
Daniels and Travers: Poemes et Chants de France. (Harrap). Nos. 21 to 70.

PART III—GROUP (v).

The same as for 1949.

GERMAN.

1950.

PART II.

Kleist: Kathchen von Heilbronn.
Scheffel: Ekkehard. (Harrap).
Chamisso: Peter Schlemihl. (O.U.P.)
Fiedler: A book of German Verse. (O.C.P.) Nos. 10, 42, 45, 46, 63, 71, 74, 92, 94, 122.

HEBREW AND SYRIAC.

1950.

PARTS II AND III—GROUP (V).

The same as for 1949.

ARABIC, PERSIAN, AND URDU.

1950.

The same as for 1949.

TAMIL.

1950.

PART II.

Poetry :—

1. Porunararruppadai.
2. Kambaramayanam—Vibhishanan Adaikka-lappadalam.
3. Silappadhikaram—Indra vizha vedutta kadai.
4. Kuruntokai.
5. Alagar Kalambakam.

(Items 1–5: The same as for 1949.)

6. Tirukkural—Chapters 85 to 90.
7. Chintamani—Namakal Ilambakam—Stanzas 3 to 55. (University Selections in Tamil, Vol. I).
8. Purananuru—Stanzas 212 to 223.
9. Periyapuranam—Eyarkon Kali-k-kama Nayanar Puranam—1 to 7, 383 to 408.

Detailed Prose :—

1. Nedunalvadai by Kothandapani Pillai, Published by Sennai Tamil Sangam, Madras, pp. 1—123.
2. Mana Vijayam, by V. G. Suryanarayana Sastri, Published by V. S. Swaminathan, Madura.

Non-detailed Prose :—

1. Dalavay Arianathar by K. Appadurai.
2. Buddhar Charitram—by Dr. V. Swaminatha Ayyar (pp. 1-77).
3. Tamil Pulavar Varalaru—Pt. 2, by Kanakaraja Ayyar,—Publishers, V. M. Gopalakrishna Kone, Madura.

PART III—GROUP (V).

Poetry I :—

1. Pattinappalai.
2. Purananuru, Stanzas 1-50.

3. Tirukkural—Olipiyal.
4. Silappadhikaram—Pukar Kandam (omitting Arangerru Kadai).

Poetry II :—

1. Kambaramayanam—Balakandam—University Selections in Tamil, Vol. 2, pp, 1-36.
2. Tiruttondar Puranam—University Selections in Tamil, Vol. 2, pp. 247 to 259.
3. Tanippadal—University Selections in Tamil, Vol. 2, pp. 299 to 306.

Prose :—

1. Sen Tamil Katturaikal—R. Venkatachalam Pillai (Palaniappa Bros., Trichinopoly).
2. Kambar Malar omitting essays 8, 17 and 18 (Alliance & Co., Mylapore, Madras).

Grammar :—

1. Nannool—Sankaranamaccivayar Urai.
2. Yapperungalakarikai.

TELUGU.

1950.

PART II.

Old Poetry :—

1. Krishnarayabaramu—From "Bharatam", Udyogaparvam, Canto 3. From Verses 3 to 409, omitting Verses 285 to 343.
2. Nigama Sarmopakhyanam—From Ramalinga's "Panduranga-mahatmyam" Canto 3. Verses 1—111.

Modern Poetry :—

Bhavya Bharti—By Addepalli Lakshmanaswamy, Teacher, Hindu College School, Masulipatam.

Drama :—

Uttararamacharitra by Malladi Suryanarayana Sastry.

Prose :—

Essays in Telugu—Edited by Munimanikyam Narasimha Rao. Published by Prabhat Book Depot, Gudivada.

Non-detailed :—

Kalapurnodayamu: Prose rendering by G. L. Narasimha Sastry & G. V. Krishna Rao, Published by Jacobin Publishers, Tenali

Grammar, Prosody and Poetics :

Syllabus same as for 1949.

PART III—GROUP (v).

The same as for 1949.

KANNADA.

1950.

PART II.

Old Poetry :—

1. Vikramarjuna Vijaya (Pampa) : 12th Aswasa (221 stanzas and the intervening prose passages).

2. Girija Kalyana (Harishwara)—(Available at Lingayat Education Society, Dharwar) : 9th and 10th Aswasas.

Modern Poetry :—

Honniya Maduve (K. Sankara Bhat). (Bala Sahitya Mandali Kodialbail, Mangalore).

Old Prose :—

Ramaswamedha (Muddanna)—Chapters 6 to 10 (pp. 42 to 109) both inclusive.

Modern Prose :—

Prachina Sahitya by T. S. Venkannaya (T. S. Shama Rao, Lecturer in Kannada, Maharajah's College, Mysore).

Drama :—

Sakuntala (Basappa Sastri).

Non-detailed Study :—

1. Bettada Jeeva (K. S. Karanth, Puttur, S.K.).

2. Parna Kuti (Krishna Sarma, Siddavana Halli, Malleswaram, Bangalore).

History of Literature :—

Karnataka Kavi Charite; Vol. I, by R. Narasimhachar : Introduction and an account of the following authors together with those of the prescribed texts :

Chamundaraya, Durga-Sinha, Ardhanemi, Sisumayana, Singararya.

PART III—GROUP (V).

Old Poetry :—

1. Pushpadanta Purana by Gunavarma II, Aswasas, 1, 2 and 3 (Madras University Publication).

2. Gadha Yuddha by Ranna, Aswasas 1, 2 and 3.

Old Prose :—

Ramaswamedha by Muddanna (whole).

Modern Prose :—

Kanur Subbama Heggaditi (K. V. Puttappa), (Satya Sodhana Book Depot, Fort, Bangalore).

Drama :—

Ascharya Chudamani by M. Ramakrishna Bhat (St. Joseph's College, Bangalore).

Grammar :—

Sabdamanidarpana by Kesiraja (Madras University Publication).

Prosody and Poetics :—

1. Chhandombudhi by Nagavarma (Sri Vatsa Press, Royapettah, Madras).
2. Kaviraja Marga (Madras University Publication).
3. Kannada Kaipidi (Mysore University Publication).

History of Literature :—

Karnataka Kavi Charite by R. Narasimhachar, Vol. I. (Revised edition) Introduction and writers of the 11th and 12th centuries. (Copies can be had of Mr. R. A. Tirunarāyana Ayyangar, son of late R. Narasimhachar, Malleswaram P. O., Bangalore).

History of Language :—

1. History of Kannada Language by R. Narasimhachar (Mysore University Publication).
2. Kannada Kaipidi, Vol. I (revised edition), Part IV, portions, relating to the History of Kannada Language (Mysore University Publication).

Dravidian Comparative Grammar :—

A Comparative Grammar of the Dravidian Languages by Dr. Caldwell (3rd revised edition).

MALAYALAM.

1950.

PART II.

Non-detailed Study :—

1. Indulekha by O. Chandu Menon, V. V. Publishing House Trivandrum.
2. Bhutarayar by Appan Tampuran (V. M. Kutti Krishna Menon, B. A., Ayyanthole Palace, Trichur).

Detailed Study :—

(a) *Poetry* :

1. Krishna Gatha—Kuchelagati—Cherusseri—any Press.
2. Mahabharatam—Karna Parvam—Ezuttaccan, any Press.

3. Karnabhushanam by Ullur S. Parameswara Ayyar, Jagati, Trivandrum.
4. Kesaviyam br K. C. Kesava Pillai—9th Sargam, S. T. Reddiyar & Sons, Trivandrum.
5. Chandalabhikshuki by Asan—Sarada Book Depot, Alwaye.

(b) *Kathakali :*

Nalacaritam :—Second day's play by Unnayi Wariyar, any Press.

(c) *Drama :*

Pratimanatakam by Kuttipurath Kesavan Nayar, Mangalam, Tirur, S. Malabar.

(d) *Prose :*

1. Vidyavivekam by Attur Krishna Pisharoti, first six essays, Poothole Pisharam, Trichur.
2. Prasangatharangini, Part I by P. K. Narayana Pillai, B.A., B.L., (from T. Gopinathan Nayar, c/o Malayali, Trivandrum).
3. Sahitya Sahyam— 2nd Part—From Kritipranayanam to the end of the book—B. V. Book Depot, Trivandram.

Candidates will be expected to have a general idea of the other works of the authors prescribed and a knowledge of the general outline of the History of Malayalam literature.

For Consultation : A Critical Survey of Malayalam Literature by Attur Krishna Pisharoti (University Publication).

PART III—GROUP (v).

The same as for 1949—substituting *Bhagavatam*, Dasamam by Ezuttacchan for *Desamam* by Purayanoor.

Text-books for the Examination of 1951.

ENGLISH.

1951.

***Shakespeare*:** Twelfth Night; Hamlet.

***Poetry*:** The same selections as for 1950.

***Prose—Detailed* :**

Johnson—Life of Milton.

Carlyle—Selections as for 1950.

Jepson—More Modern Essays, (Longmans).

***Prose—Non-detailed* :**

Hardy—Far from the Madding Crowd.

Sir Richard Livingstone—Some Tasks for Education, (O.U.P.)

Sardar K. M. Panikkar—A Survey of Indian History. (The National Information and Publications, Ltd., Bombay).

SANSKRIT.

1951.

PART II.

The same as for 1950, with the changes that :

1. Harshacharita, VI Ucchvasa be replaced by Bana's Kadambari Sangraha by Mahamahopadhyaya R. V. Krishnamachari, Uttarardha.
2. Vamana's Kavyalankarasutravritti be replaced by Jayadeva's Chandraloka, Arthalankaras, first fifty Alankaras.

NOTE.—This will be up to and including "Vichitra", verses 11 to 82 in the V Mayukha, Gujarati Printing Press Edition.

FRENCH.

1951.

PART II.

1. Daniels and Travers: Poemes et chants de France (Harrap Series), Nos. 21 to 70.
2. Corneille: Horace, O. U. Press.
3. French Short Stories selected by T. B. Rudmose-Brown. Oxford, Clarendon Press.
4. Balzac: Eugenie Grandet, abridged edition by Spiers, Heath's Edition.

PART III—GROUP (v).

The same as for 1950.

GERMAN.

1951.

PARTS II AND III.

The same as for 1950.

MARATHI.

1951.

PARTS II AND III.

The same as for 1950.

HINDI.

1951.

PART II.

Poetry :

1. Madhuvan (published D. B. H. P. Sabha, Madras).
2. Pathik (Ramnares Tripathi).

Prose, Drama, Non-detailed, Grammar, etc.

The same as for 1950.

TAMIL.

1951.

PART II.

Poetry :

1. Tirukkural—Chapters 85 to 90.
2. Chintamani—Namakal Ilambakam—Stanzas 3 to 55 (University Selections in Tamil, Vol. I).
3. Purananuru—Stanzas 212 to 223.
4. Periyapuranam—Eyarkon Kali-k-kama Nayanar Puranam— 1 to 7, 383 to 408.

(Items 1 to 4: The same as for 1950.)

5. Mullaippattu.
6. Kambaramayanam—Kumbakarnan Vadai-p-padalam — Stanzas 71 to 169.
7. Cilappadhikaram—Vanchikandam—Katchikadai and Kal-kot-kadai.
8. Madurai-k-kalambakam—Stanzas 92, 93, and 94.

Prose Detailed :

1. Manonmaniyam—Sundaram Pillai (S.S.W.P., Madras.)
2. Kalai-Kopura Vayil—National Publishing House, Madras.

Prose Non-detailed :

1. Maduri-k-kumaranar—Avvai Doraiswami Pillai (S. S. W. P., Madras.)
2. Valkkai Sulal—A. Shanmugam, Coimbatore.

PART III—GROUP (V).

The same as for 1950.

TELUGU.

1951.

PART II.

Old Poetry :

The same as for 1950.

Modern Poetry :

Viziasri by "Karunasri"

Drama :

The same as for 1950.

Prose :

Saraswatavyasamulu by Korada Ramakrishnayya.

Non-detailed :

Kalabhashini by D. Venkataramana Sastri.

Grammar, Prosody and Poetics : Syllabus same as for 1950.

PART III—GROUP (V).

Old Poetry:

1. Kalapurnodayam—Canto 4, Verses 1-151.
2. Raghavapandaviyam with Kavibhavaprakasika Commentary; Canto 4.
3. Amuktamalyada—Canto 6. Verses 1-66.
4. Nilasundariparinayam by Kuchimanchi Timmakavi.

Modern Poetry:

1. Panasala by D. Rami Reddi.
2. Charuni by Patibanda Madhava Sarma.

Drama:

1. Ascharyachudamani by M. Viswanatha Sarma.
2. Sriramapattabishekam by Patalabhedi Subrahmanyam.

Prose:

1. Vyasamanjari by C. R. Reddi.
2. Sringarasrinadhamu by Veturi Prabhakara Sastri.

Inscriptions:

Sasanapadyamanjari Ed. by Jayanthi Ramayya.

Literaray Criticism:

1. Sahityasamalochanam by P.V. Hanumantha Rao.
2. Andhrabharata Kavita Vimarsanam by K. Ramakrishnayya, (Chaps. 3 and 4).

History of Language and Literature:

1. Sandhi (M. U. Publication).
2. Andhrabhashavikasam by G. J. Somayaji.
3. Andhra Vangmaya Charitra Sangraham.

Grammar, Prosody and Poetics:

1. Balavyakaranam.
2. Appakaviyam—Canto 3.
3. Chandralokam Ed. by A. Umakantam.
4. Dasarupakam Ed. by Malladi Suryanarayana Sastri.

KANNADA.

1951.

PART II.

Old Poetry:

1. Gada Yuddha by Ranna—Aswasas 6 to 10.
2. Jagannatha Vijaya—Aswasa 8 by Rudra Bhatta.

Modern Poetry:

Vaishakhi by M. Govinda Pai.

Old Prose:

Ramaswamedha by Muddana—Chapters 1 to 3.

Modern Prose:

Prachina Sahitya by T. S. Venkannayya.

Drama:

Mitravinda Govinda by Singararya.

Non-detailed Study:

1. Ananda Matha by B. Venkatachar.
2. Parna Kuti by S. Krishna Sarma.

History of Literature:

Karnataka Kavicharite by R. Narasimhachar, Introduction and an account of the following authors together with those of the prescribed texts:—

Nripatunga, Chavundaraya, Nagavarma, Chamarasa, Kumara Vyasa, Lakshmisa.

Grammar:

Kannada Kaipidi, Volume I, Part I (Mysore University Publication)—Portions relating to Grammar only, or Grammar portion of the same published under the title "Kannada Vyakarana" by Mysore University.

PART III—GROUP (V).

Old Poetry:

1. Pushpadanta Purana by Gunavarma, Aswasas 1, 2, 3.
2. Gada Yuddha by Ranna, Aswasas 1 to 5.

Old Prose:

Ramaswamedha (whole) by Muddana.

Modern Prose:

Gopalakrishna Gokhale by D. V. Gundappa.

Drama:

1. Ascharya Chudamani by M. R. Bhat (St. Joseph's College, Bangalore).
2. Dharmaduranta by M. R. Sri.

Grammar:

Sabdamanidarpana by Kesiraja (Madras University Publication).

Prosody and Poetics:

Chhandombudhi by Nagavarma.

Kavirajamarga.

Kannada Kaipidi (Vol. I, portions relating to Alankaras).
Rasaratnakara (Madras University Publication.)

History of Literature :

Karnataka Kavi Charite by R. Narasimachar, Vol I, 11th and 12th Centuries.

History of Language :

The same as for 1950.

Dravidian Comparative Grammar :

A Comparative Grammar of the Dravidian Languages by Dr. Caldwell (3rd revised edition).

MALAYALAM.

1951.

PART II.

Detailed Study :—

Poetry :—

1. Khandavadahanam—Krishna Gatha—Cherusseri—any Press.
2. Mahabharatam—Karna Parvam—Ezuttaccan—any Press.
3. Kavyopaharam by Kuttipurath Kesavan Nair, Mangalam, Tirur.
4. Kannunirthulli by Nalappat Narayana Menon, Punnayurkulam, S. Malabar, *via* Kunnamkulam.
5. Kesaviyam, I and II Sargams, by K.C. Kesava Pillai, S. R. Book Depot, Trivandrum.
6. Seetha by Asan—Sarada Book Depot, Trivandrum, or Alwaye.

Kathakali :—

Nalacaritam—2nd day's play—by Unnayi Wariyar—any Press.

Drama :—

Uthararama Charitam by C. Chathukutty Mannadiar, V. Sundara Ayyar & Sons, Trichur.

Prose :—

1. Mahakavi K. C. Kesava Pillai by A. D. Hari Sarma, St. Albert's College, Ernakulam.
2. Prasanga Tarangani—Part III by P. K. Narayana Pillai, B.A., B.L., P. K. Memorial Press, Trivandrum.

3. Sahityasahyam—from Krithipranayanam to the end—A. R. Raja Raja Varma, B V. Book Depot, Trivandrum.

Non-detailed Study :—

1. Indulekha by O. Chandu Menon, V. V. Publishing House, Trivandrum.

2. Maharashtra Prabhavam by Bhaskar, V. Sundara Ayyar & Sons, Trichur.

PART III—GROUP (v).

Detailed Study :—

Poetry :—

1. Ramacharitam—First 20 Patalams.
2. Unnuneelisandesam—Purvasandesam, edited by Attur Krishna Pisharoti, Poothole Pisharom, Trichur.
3. Krishnagatha—Vatsastheyam—Cherusseri—any Press.
4. Mahabharatam—Bhishma Parvam—Ezuttaccan—any Press.
5. Munnu Bhasha Kavyangal by Kuttipurath Kesavan Nayar, Mangalam, Tirur.
6. Umakeralam—7 and 8 Sargams—by Ullur, Jagathi, Trivandrum.
7. Leela by Asan, Sarada Book Depot, Trivandrum.

Kathakali :—

Kalakeya Vadham—Kottayathu Thampuran—Edition by P. Krishnan Nayar, (Accoth House, Chittoor, Cochin State) is recommended.

Drama :

1. Othello by M. R. Nayar, M.A., Mathrubhumi, Calicut.
2. Kerala Sakuntalam by Vallathole, Cheruthuruthi, Cochin State.

Prose :

1. Marthandavarma by C. V. Raman Pillai, Kamalalaya Press, Trivandrum.
2. Rajankanam by Kuttikrishna Marar, Mathrubhumi, Calicut.
3. Introduction to Kali Worship in Kerala by Dr. C. Achyuta Menon (Madras University Publication).

APPENDIX IV.

B.A. (HONOURS) DEGREE EXAMINATION.

SYLLABUSES AND TEXT-BOOKS.

B.A. (Hons.) Preliminary, B. Sc.—Part I, B.Sc. (Hons.)—Part I, B.Com.—Part I, and B. O. L. (Pass and Honours)—Part I Examinations.

ENGLISH.

1949.

Prose-Detailed:

(1) Arnold—Selections Ed. Campagnac, (Macmillan).

(2) Longer Specimens of Modern English Prose omitting *De Senectute* (O.U.P.)

Non-Detailed:

1. Trollope: The Last Chronicle of Barset.
2. Modern Short Stories—Scholar's Library, (Macmillan).
3. J. S. Hoyland: Gopal Krishna Gokhale, (Y.M.C.A. Publishing House, Calcutta).

1950.

Prose—Detailed:

(1) Carlyle—Selections from the French Revolution. Hemingway and Seymour (D. C. Heath & Co.).

(2) Longer Specimens of Modern English Prose omitting *De Senectute* (O.U.P.).

Non-detailed:

1. Thackeray: Esmond.
2. M. R. Ridley: Abraham Lincoln (Blackie & Son).
3. Tagore: Home and the World, (Macmillan).

1951.

Prose—Detailed :

1. Carlyle—Selections as for 1950.
2. Jepson : More Modern Essays, (Longmans).

Prose-Non-detailed :

1. Hardy: Far from the Madding Crowd.
2. Sir Richard Livingstone: Some Tasks for Education (O.U.P.).
3. Sardar K. M. Panikkar: A Survey of Indian History. (The National Information and Publications, Ltd., Bombay).

Branch I-A—Mathematics.

The following is the list of subjects from which special subjects are to be selected under each of the divisions specified in (*c*) under Part II—I-A—Mathematics—in Regulation 2 of Chapter XLIV.

Note.—The Board of Studies may from time to time add to the list or exclude subjects from the list, either temporarily or permanently.

Two of the following subjects, at least one of which shall be from numbers 1 to 5:—

1. *Geometry*—
   (1) Advanced Projective Geometry.
   (2) Non-Euclidean Geometry.
   (3) Higher Plane Curves.
   (4) Differential Geometry.

2. *Algebra*—
   (1) Finite Groups and Substitutions.
   (2) Invariants.
   (3) Statistics including Probabilities and Errors of Observation.
   (4) Elements of General Algebra. (For Syllabus see under Branch I-B).

3. *General Theory of Functions*—
   (1) Functions of real variables.
   (2) Theory of Uniform Functions of a complex variable and integral functions.
   (3) Function of a complex variable after Riemann including Riemann's surfaces.

4. *Differential Equations—*

(1) Linear Differential Equations.

(2) Partial Differential Equations.

5. *Special Functions—*

(1) Elliptic Functions.

(2) Functions of Harmonic Analysis.

6. *Dynamics—*

(1) Advanced Rigid Dynamics.

(2) Theoretical Dynamics.

7. *The Potentials.*

8. *Elasticity.*

9. *Hydrodynamics and Sound.*

(1) Irrotational motion of liquids.

(2) Propagation of Sound in gases.

(1) GEOMETRY.

Including Pure Geometry and Analytical Geometry of Two and Three Dimensions :—

(a) *Geometry of Two Dimensions.*

The metrical properties of the point, the straight line, the circle, the parabola, the ellipse and the hyperbola treated by pure geometric methods, by means of Cartesian co-ordinates, polar co-ordinates and homogeneous co-ordinates (chiefly areal and trilinear).

Cross Ratios, Harmonic Section. Involution ranges and pencils. Perspective. Principle of duality. Reciprocation with respect to conics. Line Co-ordinates, application of tangential equations to conics. The method of projection, considered from the pure geometric point of view, its analytic basis. The principles of continuity, imaginary points and lines. Projective properties of conics. Simple geometric applications of invariants of conics.

(b) *Geometry of Three Dimensions.*

The line, the plane and the regular solids treated by pure geometrical methods.

Analytical Geometry of Three Dimensions with Cartesian Co-ordinates.—The Straight Line, the Plane, the Sphere, the Cone, the Quadrics, the plane sections and generating lines. Confocal Quadrics, The reduction of the general equation of the second degree.

A. Books for Study—

1. Askwith : Pure Geometry.
2. W. P. Milne : Projective Geometry.
3. Smith : Conic Sections.
4. Askwith : Analytical Geometry of the Conic Sections.
5. C. Smith : Solid Geometry.
6. R. J. T. Bell : Co-ordinate Geometry of Three Dimensions.
7. Hall and Stevens : School Geometry, Part VI.
8. Nixon : Geometry in Space.
9. S. Suryanarayana Ayyar and A. Santiago : Projective Geometry.

B. Books for Reference—

1. C. V. Durell : Plane Geometry for Advanced Students.
2. J. W. Russell : Pure Geometry.
3. Milne : Homogeneous Co-ordinates.
4. Salmon : Conic Sections.
5. Frost : Solid Geometry.

(2) ALGEBRA AND THEORY OF EQUATIONS.

Inequalities and Limits. Convergence and divergence of Series and of Infinite Products. Binomial and Exponential Theorms. Logarithmic series. Summation of series. Continued fractions, simple and recurring; indeterminate equations. Theory of numbers. Elementary propositions in Probability. (Standard as in C. Smith's Algebra).

Theory of equations.—Relations between the roots and co-efficients. Symmetric functions of the roots; transformation of equations; binomial and reciprocal equations; properties of derived functions. Rolle's theorem. Location of the roots. Sturm's theorem. Algebraical solution of cubic and biquadratic equations; solution of numerical equations. Horner's method. Graphical solution of equations. Determinants and Elimination. (Standard as in Burnside and Panton's).

Books for Study:—

1. C. Smith's Algebra.
2. Burnside and Panton's Theory of Equations.
3. Bernard and Child : Higher Algebra.

(3) PLANE TRIGONOMETRY.

Fuller treatment of the B.A. Course. Properties of triangles and quadrilaterals. Complex Numbers. De Moivre's Theorem and Applications. Factorisation, Infinite series, convergence of complex series. The Power series. Trigonometrical expansions Determination of π.

Summation of Series. Elementary properties of hyperbolic functions. Convergency of Infinite Products. Expression for the sine and cosine as infinite products.

(Standard as in Loney's Trigonometry and treatment as in Hobson-Plane Trigonometry).

(4) MATHEMATICAL ANALYSIS.

Including the Differential and Integral Calculus and Differential Equations :—

1. *Preliminary.*

Irrational numbers, simple notions as to their genesis obtained from the intuitional properties of the straight line. The linear continuum. Infinite sequences, limiting points, upper and lower limits. General principle of convergence. General idea of a function of a real variable, the elementary functions and their graphical treatment. Limits of functions of a continuous variable, continuity of functions, properties of continuous functions. Inverse functions, proof of existence when original function is steadily increasing or decreasing.

2. *Differential and Integral Calculus.*

Functions of one real variable. Derivatives, general theorems and rules for differentiation, repeated differentiation. Leibnitz's theorem, general theorems concerning derivatives. Rolle's theorem, mean value theorem Geometrical applications of derivatives. Integration as the operation inverse to differentiation, standard forms and processes of integration. The general mean value theorem of the differential calculus, applications to maxima and minima, to evaluation of limits, and to contact of plane curves. Envelopes, curvature. Taylor's series, convergence of the standard Taylor series. Integration of bounded functions according to Riemann, integrability of continuous functions and monotonic functions, the fundamental theorem of the integral calculus. The first and second mean value theorms of the integral calculus. Functions defined by definite integrals, their continuity, differentiation and integration. Applications of definite integrals.

Functions of several real variables, continuity. Implicit functions, idea of their existence (without proof). Partial derivatives, differentiation of implicit functions and composite functions. Euler's theorem on homogeneous functions. Taylor's theorem for functions of several variables, simple applications to maxima and minima, and to the finding of singular points and asymptotes of algebraic curves. Double integrals, line integrals, surface integrals, and triple integrals—evaluation in simple cases. Green's theorem. Geometric applications of multiple integrals.

Simple instance of functions of a complex variable. Cauchy's theorem (proof by use of Green's theorem).

3. *Infinite Series and Infinite Integrals.*

Series of positive terms. Simpler tests of convergence. Series of positive and negative terms, Abel's and Dirichlet's tests. Absolute convergence, effect of change of order of terms on sum. Absolutely convergent double series. Multiplication of absolutely convergent series.

Series of variable terms. Uniform convergence. Weierstrass' M-test, chief properties of uniformly convergent series as regards continuity, differentiation and integration. Fundamental properties of power series, standard power series. Fourier series of bounded functions with a finite number of maxima and minima and a finite number of discontinuities. Infinite products, the standard products.

Infinite Integrals. Functions defined by infinite integrals. Uniformly convergent integrals, their continuity, sufficient conditions for differentiating and integrating under the sign of integration, simple applications to the evaluation of infinite integrals.

4. *Differential Equations.*

(A) Ordinary Differential Equations involving two variables.—

Formation of differential equations. character of solutions, geometrical meaning of differential equations.

Equations of first order.—Variables separable, linear equation. Bernoulli's equation, homogeneous equation, one variable absent, $Mdx+Ndy=0$, integrating factors and their discovery in the simpler cases. Equations of nth degree that can be resolved into component equations of 1st degree, equations solvable for x or for y, Clairaut's form. Singular solutions, the p- and c- discriminants, geometric interpretation.

Linear equations with constant co-efficients; Euler's linear equations. Exact equations.

The equations $y(n)=f(x)$, $y(n)=f(y)$, $y(n)=f\left\{y^{(n-1)}\right\}$, $y(n) f\left\{y^{(n-2)}\right\}$; Depression of order when one variable is absent.

Equations of second order.—The complete solution in terms of known integral relation between integrals.

Geometric applications; finding of curves with given properties; trajectories.

(B) Ordinary Differential Equations involving more than two variables :—

Simultaneous linear differential equations, the equation $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$ and its geometrical interpretations. Total differential equations (with three variables), the condition of integrability, geometric interpretation of the equation and its solution.

(C) Partial Differential Equations :—

Their derivation, classification of integrals of a partial differential equation, geometric interpretation. Lagrange's equation $Pp+Qq=R$, Charpit's method. The standard form $\psi(p,q)=0$, $\phi(z,p,q)=0$, $\phi(x,p) = \psi(y,q)$ and $z=px+qy+(p,q)$.

Standard as in the following books :—

1. H. Lamb : Infinitesimal Calculus.
2. Gibson : Elementary Treatise on the Calculus.
3. Murray : Introductory Course in Differential Equations.
4. Carslaw : Fourier Series.
5. Edwards : Differential Calculus.

Books for Reference :—

1. G. H. Hardy : Pure Mathematics.
2. Goursat-Hedrick : Mathematical Analysis, Vol. I.
3. Wilson : Advanced Calculus.
4. Chrystal : Algebra, Vol. II.
5. Bromwich : Infinite Series.
6. Forsyth : Treatise on Differential Equations.
7. Boole : Differential Equations.
8. Williamson : Differential Calculus and Integral Calculus.
9. Jordan : Cours d'Analyse.
10. Picard : Traite d'Analyse.
11. Piaggio : Differential Equations.
12. Dockeray : Pure Mathematics.
13. G. A. Gibson : Advanced Calculus.
14. C. A. Stewart : Advanced Calculus.
15. Knopp : Infinite Series.

(5) DYNAMICS OF A PARTICLE.

Preliminary.

Velocity and acceleration, relative motion, angular velocity, laws of motion, impulsive forces, units.

Rectilinear Motion.

Equations of motion, simple harmonic motion, constant disturbing force, periodic disturbing force, damped and forced oscillations : various laws of resistance.

Motion in two Dimensions.

(1) *Cartesian Co-ordinates.*—Composition of simple harmonic motions, motion of a projectile in vacuum, in a resisting medium, different laws of resistance. Equation of energy. Rotation axes.

(2) *Polar Co-ordinates.*—Velocity and acceleration in polar co-ordinates. Central forces; differential equation of orbit, orbits for various laws of force. Disturbed circular orbit, apses. Law of the inverse square; construction of orbit; hodograph, time of describing an arc; Kepler's laws, correction to 3rd law; perturbations.

(3) *Constrained Motion.*—Tangential and normal accelerations. Motion on a fixed smooth or rough curve. Motion in a smooth or rough cycloid, motion in a circle, time of describing an arc, series for time of oscillation; small oscillations of simple pendulum under resistance proportional to square of velocity. Motion on a revolving curve; motion of a particle in a revolving tube.

(4) *Motion of two or more Particles.*—Principles of conservation of energy and of angular momentum. Two particles connected by a string passing over a pulley. Impulses, motion of a chain.

(6) DYNAMICS OF A RIGID BODY.

Moments and products of inertia; momental ellipsoid, momental ellipse, equimomental systems. Principal axes. D'Alembert's principle. General equations of motion. Independence of translation and rotation. Impulsive forces.

Motion about a fixed axis.—Fundamental theorem. The compound pendulum, centre of oscillation. Torsional oscillations, bifilar suspension. Pressures on the fixed axis, bodies, symmetrical and not symmetrical. The ballistic pendulum. Impulsive forces, centre of percussion.

Motion in two Dimensions.—Finite forces. General principles of conservation of energy and of linear and angular momentum. Systems with one degree of freedom, oscillations about equilibrium. Impulsive forces, impact of a rotating sphere on the ground. Lagrange's equations, systems of two degrees of freedom, double pendulum, oscillations about equilibrium.

Standard as in the following books:—

Lamb's Dynamics.

Loney's Dynamics.

Besant and Ramsay's Dynamics.

Williamson and Tarleton's Dynamics.

Books for Reference:—

Love's Theoretical Mechanics.

Routh's Dynamics of a Particle.

Tait and Steel's Dynamics.

Routh's Elementary Rigid Dynamics.

(7) STATICS.

Forces at a point.—Parallelogram of forces. Parallelepiped of forces. Geometric and analytical reduction of forces acting at a point. Conditions of equilibrium of such forces. Friction. Equilibrium of a particle on smooth and rough curves and surfaces.

Forces in one plane.—Parallel forces. Theory of moments of forces and of couples; reduction of coplanar forces and conditions of equilibrium of such forces. Actions at smooth and rough hinges and joints. Principle of virtual work as applied to coplanar forces, Astatic equilibrium.

Graphical Statics.—Centres of gravity of arc, plane area, surface, and solid. Stable and unstable equilibrium. Machines with and without friction.

Forces in three dimensions acting on a rigid body.—Reduction of such forces to a force and a couple; general conditions of equilibrium; principle of work applied to any system of forces. Work or Potential function. Stable and unstable equilibrium. Poinsot's central axis; wrench, screw; resultant wrench of two given wrenches. The cylindroid. Reciprocal screws. Reduction of any system to two forces. Conjugate lines. Nul lines and nul planes.

Equilibrium of strings.—General conditions of equilibrium of an inextensible string. The common catenary, the parabola of suspension bridge, the catenary of uniform strength; strings on smooth surfaces and curves, strings on rough curves; strings under central forces, extensible string.

Standard as in—

Loney's Statics.

Books for Reference :—

Minchin's Statics, Vol. I and Vol. II, Chapters XIII—XV.

Routh's Analytical Statics, Vol. I.

Besant's Statics.

(8) HYDROSTATICS.

Definitions of 'perfect fluid' and 'pressure at a point.' Equality of pressure at a point in all directions: general conditions of equilibrium of a fluid and of a liquid in particular. Fluid at rest under the action of (1) gravity, (2) central forces. Rotating liquid.

Resultant thrusts of fluid on plane areas. Centre of pressure, Thrust of liquid on curved surfaces.

General condition of equilibrium of a floating body. Surfaces of buoyancy and flotation. Positions of equilibrium. Potential energy stored up by the immersion of a solid.

Stable and unstable equilibrium of floating body. Metacentre; expression for metacentric height. Experimental determination of metacentric height; stability of equilibrium (1) of a hollow vessel containing a liquid floating in another liquid; (2) of bodies floating under constraint; (3) of bodies floating in heterogeneous liquid (simple cases only); theory of stability based on the principle of energy.

Standard as in—

Besant and Ramsay's Hydrostatics, Chapters I—V.

Minchin's Hydrostatics excepting Chapter on surface tension.

Book for Reference :—

Greenhill's Hydrostatics.

(9) ASTRONOMY.

General and Elementary Spherical.

The celestial sphere, astronomical co-ordinates.

The diurnal motion of the heavenly bodies and its explanation by rotation of the Earth. Arguments and proofs for the Earth's rotation. Change of phenomena due to a change of the observer's place on the Earth. Form and size of the Earth. Simple problems connected with the diurnal motion solved by using spherical trigonometry.

The apparent motion of the Sun among the stars. Variations in the length of the day at various places. Twilight. Explanation of the phenomena on the supposition of the annual motion of the earth round the Sun and proofs for this hypothesis. The determination of the first point of Aries and the obliquity of the Ecliptic. The signs of the Zodiac. Effects of Precession and Nutation.

The Earth's orbit round the Sun. Kepler's laws and Newton's deductions therefrom. True anomaly, mean anomaly and the lengths of the different seasons.

Finding by observation the latitude and longitude of a place, and the error of the clock.

Different units of time and the conversion of one into another. Sundial. Equation of time. Different kinds of years. The Calendar.

Corrections of observations for astronomical refraction, parallax and aberration and the fundamental formulae embodying these corrections. Determination of parallax of heavenly bodies and their distances.

The Moon. Its orbit round the Earth and the Sun. Its rotation and librations. Synodic and Sidereal months. Eclipses and their causes. Ecliptic limits. Number of eclipses in a year. The Saros.

Members of the solar system. Elements of a planet's orbit. Direct and retrograde motions of the planets. Phases of the planets. Transits of planets across the Sun. Comets and meteors.

Principal constellations and stars. Double and multiple stars. Binary Stars. Nebulae.

The observatory. The principal instruments—The astronomical clock. Transit Instrument. The Transit Theodolite. Equatorial. Sextant. The principal errors of the Transit Instrument and their corrections.

Text-books recommended for Study :—

(1) Barlow and Bryan's Astronomy.
(2) Young's General Astronomy.
(3) Moulton's Introduction to Astronomy.
(4) Ball's Sphercial Astronomy (*easier parts*).
(5) Astronomy by Dr. H. Subrahmanya Ayyar.
(6) A Text-book of Astronomy by G. V. Ramachandran,
(7) Smart: Astronomy.

Books for Reference :—

(1) Ball's Spherical Astronomy,
(2) Newcomb's Spherical Astronomy,
(3) H. S. Jone's General Astronomy.

(10) THEORY OF STATISTICAL METHODS.

A. *Probability* :—

I. Definition: Laws of addition and multiplication.

II. Elementary probability law and integral probability. Laws of Random Variable, simultaneous probability, laws of number of variables :—

Applications.

If $x_1, x_2 \ldots\ldots x_n$ are n variables such that $p(x_1, x_2, \ldots\ldots x_n)$ is their simultaneous probability law,

(i) $$p(x_1, x_2 \ldots\ldots x_{n-1}) = \int_{-\alpha}^{\alpha} p(x_1, x_2 \ldots\ldots x_n)\, dx_n,$$ and its immediate extension

(ii) if $y_1, y_2, \ldots\ldots y_n$ are n functions of the x's, $p(y_1, y_2 \ldots\ldots y_n)$

$$= p(x_1, x_2 \ldots\ldots x_n) \frac{\delta(y_1, y_2, \ldots\ldots y_n)}{\delta(x_1, x_2, \ldots\ldots x_n)}$$

(iii) Relative Probability Law:—

$p(x_1, x_2) = p(x_1)\ p(x_2|x_1)$, where $p(x_2|x_1)$ is the probability law of x_2 for a given x_1.

III. Mathematical Expectation: Applications.

IV. Bays' Rule: Its criticisms.

V. Fourier's Inversion formula: viz.

If $\phi(it)$ = expectation of e^{ixt}

$$= \int_{-\alpha}^{\alpha} e^{ixt}\, p(x)\, dx,$$

then, $p(x) = \dfrac{1}{2\pi} \int e^{ixt}\, \phi(it)\, dt.$

Simple applications:

(i) If $\phi(t)$ = Expectation of x^t

$$= \int x^t\, p(x)\, dx$$

$$p(x) = \frac{1}{2\pi i} \int x^{-t-1}\, \phi(t)\, dt.$$

(ii) If x and y are independent and $z = x + y$,

$\phi z(it) = \phi x(it) + \phi y(it)$, where $\phi z(it) = \int e^{izt}\, p(z)\, dz.$

VI. Application of probability to simple problems in Insurance and Mortality Tables.

B. *Statistics*:—

I. *Elementary Principles.*—Collection of data, charts and diagrams, Frequency curves, the method of samples in the study of large populations.

II. *Statistical averages.*—The Arithmetic Mean, Mode and Median, Index numbers, Geometric and Harmonic Means.

III. *Dispersion.*—The Standard Deviation, the average Deviation, Semi-interquartile Range, Probable Error.

IV. *Correlation.*—Definition of Regression: If x and y are two variables, the regression of x on y is

xy = Expectation of x for a given value of y.

$$= \int x p(x/y)\, dx$$

$$= \int x p(xy)\, dx \Big/ \int p(xy)\, dx.$$

Linear Regression, Correlation Co-efficient. Multiple and Partial Regression, Multiple Correlation Surface in the case when all the regression equations are linear.

Distinction between Independence and non-correlation :—

(a) $p(x, y) = p(x) . p(y)$ for independence.

(b) $\sum (xy) = \sum (x) . \sum (y)$ for non-correlation.

(a) implies (b) : but not the converse.

V. *Non-linear Regression* : Correlation Ratio. Methods of Contingency and Association.

VI. *The Normal Curve of Error* :—

(i) Binomial Distribution ; Normal Curve as the limit of the Binomial.

(ii) The Principle of the Arithmetic Mean, Derivation of the Law of Error.

(iii) Hagen's Hypothesis. Deviation of the Law of Error.

(iv) Method of Least Square and the outline of the method of Gauss' Normal Equations.

VII. *Estimation.*—

(i) Method of maximum likelihood. Consistent statistics. Sufficient statistics, Efficient statistics. Biased and Unbiased Estimates.

(ii) The Method of Moments. Pearson's Curves.

VIII. *Testing Hypothesis.*—

(i) λ^2 Test

(ii) Students' t test : Fisher's z transformation.

(iii) Neyman—Pearson λ criterion.

IX. *Design of Experiments.*—

(i) Randomised Blocks.

(ii) Latin Squares.

***Books** recommended for Study* :—

1. Advanced Theory of Statistics—M. G. Kendall.
2. Introduction to the Theory of Statistics—G. N. Yule (Revised).
3. Methods of Statistics—L. H. C. Tippet. (For Analysis of Variance)
4. Elements of Probability—Levy and Roth.
5. Combination of Observations—D. Brunt. (For section B. VI. ii, iii and iv).

***Books** for Reference* :—

1. Statistical Methods for Research Workers—Fisher.
2. Probability—Burnside,
3. Design of Experiments—R. A. Fisher.
4. Statistical Methods—Secrest. (Elementary Principles).

Following Papers :—

1. On the Mathematical foundations of theoretical Statistics: R.A. Fisher. (Phil. Trans. A. Vol. 222, pp. 309-368).

2. Theory of Statistical Estimation: R. A. Fisher (Proc. Camb. Phil, Soc.. Vol. XXII, Part 5).

(11) THEORY OF UNIFORM FUNCTIONS OF A COMPLEX VARIABLE AND INTEGRAL FUNCTIONS.

General Theory.

Complex numbers, their geometric representation. DeMoivre's Theorem. Definition of a function of a complex variable, uniformity and multiformity of functions. Analytic functions, the Cauchy-Riemann definition, the differential equations satisfied by the real and imaginary parts of an analytic function. Conformal representation of one plane on another, complete discussion of the transformations.

$u=\frac{az+b}{cz+d}$, $u=z^n$ (n positive integer), $u=e^z$ (with simple variations)

Cauchy's Theorem for simple contours and functions which are analytic inside and on the contour. The fundamental formula

$f(x)=\frac{1}{2\pi i}\int\frac{f(z)}{z-x}dz$. Taylor's series. Liouville's theorem.

Laurent's expansion. Point at infinity, development in its domain. Weierstrass' theorem on the asymptotic behaviour in the domain of an isolated essential singularity. Weierstrass' theorem on a series of analytic functions. Fundamental theorem or residues with simple applications, including evaluation of simple definite integrals.

Weierstrass' theorem on the infinite product expression for an integral function. Mittag-Leffler's theorem on the expression of a function with isolated singularities as a series of rational functions.

Simple periodic functions, expansion of an integral simple periodic function. The impossibility of a uniform analytic function having three independent periods. Elliptic functions, their general properties about the sum of the residues, the number of zeros and the number of poles, the difference between the sum of the zeros and the sum of the poles in a parallelogram of periods; algebraic relation between elliptic functions of the same periods. The Weierstrassian function $P(u)$ and its fundamental properties.

The fundamental properties of power series of a complex variable, elements of an analytic function, the process of analytic continuation. Weierstrass's conception of an analytic function. Singular points, their place in the Weierstrassian Theory. Functions with natural boundaries, simple examples.

Integral Functions.

The Maximum Modulus Theorem.

Schwarz's Lemma.

Caratheodory's Inequality.

Definitions of: Order, Exponent of Convergence, Canonical Product, Genus.

The Function $n(r)$.

Hadamard's Factorization Theorem.

The order of a canonical product is equal to the exponent of convergence of its zeros.

For any integral function, if the order is not an integer, the exponent of convergence is equal to the order.

Easy applications.

The following books in so far as they deal with the subject-matter given in the syllabus, are recommended :—

A. *Books for Study* :—

1. Goursat : Mathematical Analysis—Vol. II, Part I.
2. Borel : Lecons sur la Theorie des Fonctions Entiers.
3. Watson : Complex Integration and Cauchy's Theorem.
4. McRobert : Theory of Functions.
5. Harkness and Morley : Introduction to the Theory of Analytic Functions.
6. Titchmarsh : The Theory of Functions.
7. P. Dienes : The Taylor Series.
8. E. T. Copson : Functions of a Complex Variable.
9. E. G. Phillips : Functions of a Complex Variable.

B. *Books for Reference* :—

1. Forsyth : Theory of Functions.
2. Whittaker and Watson : Modern Analysis.

(12) ORDINARY LINEAR DIFFERENTIAL EQUATIONS.

(A) *Elementary Methods of Integration.*—Equations of the first order, standard forms, Bernoulli's and Riccati's equations. Integrating factors. General linear equation of the nth order and properties, depression of order. adjoint equation. Special forms: with constant co-efficients. Euler's equation (only for two variables). Laplace's equation. exact differential equation. The general linear differential equation of the 2nd order ; various methods of integration, normal form. Trajectories.

(B) *The Theory of Linear Differential Equations.*—Existence theorems. Equation of the first order, system of linear equations of

the first order, homogeneous linear equation of the nth order. First integrals, Jacobi's multipliers. Fundamental systems of integrals, the △ ‡ ⊙ criterions. Regular integrals. Study of integrals near a singular point; form and properties, permutation of integrals. The *fundamental* equation; formal expression of the integrals when all the roots of the fundamental equation are distinct; expression in logarithmic form of the set of integrals corresponding to a repeated root of multiplicity. Fuchs' Theorem on the form of a homogeneous linear equation having all its integrals regular near a singularity, and its converse. Frobenius' method of integration for equations of the 2nd order and application to Legendre's and Bessel's equations and to the equation of the hypergeometric series.

(C) *Higher methods of integration.*—Integration by series with simple applications to Legendre's equation. Bessel's equation, and the equation of the hypergeometric series. Solution by definite integrals of Laplace's equation and Bessel's equation. Systems of linear equations with constant variable co-efficients.

Standard to be found in :—

(A)	Forsyth's Treatise	Chapters II—IV
	Goursat	Chapters II—III
(B)	Forsyth's Theory, Vol. IV	Chapter I nearly complete.
		Chapters II—III greatly restricted.
	Goursat	Chapters II—III
(C)	Forsyth's Treatise	Chapters V, VII and Chapter VIII restricted.
	Goursat	Chapter III.

Books recommended :—

A. R. Forsyth: (1) Treatise on Differential Equations.
(2) Theory of Differential Equations. Part III, Vol. IV.

Goursat's Mathematical Analysis, Vol. II, Part II (English Translation).

Jordan; Cours d'Analyse, Vol. III.

Laurent: Traite d'Analyse. Tome V.

Picard: Traite d'Analyse, Tome III.

Schiesinger: Handbuch der Theorie der Linearen Differential Gleichungen.

E. L. Ince: Differential Equations.

(13) POTENTIAL THEORY.

Detailed Syllabus.

Vector Field—Elementary vector algebra and vector analysis. Line integrals, surface integrals, divergence and Stokes' theorem. Green's fundamental formula.

$$\iiint V \triangle U dv + \iiint \triangle_1 (U,V) dv = \iint V \frac{dU}{dn} do \text{ Gauss, integral,}$$

(Treatment as in Jordan, Cours, d'Analyse, Vol, II, Ch. II except for the notations. Vectorial notations may be used).

Newtonian Potentials—At points of free space they are analytic, and satisfy Laplace's equation. Their developments in series of Legendre's polynominals, spherical and zonal harmonics, the convergence on the sphere of convergence being *not* discussed (Treatment as in Goursat, Vol. III, Ch. XXVII, and Kellog, Ch. V). Behaviour at great distances.

Potentials of volume distribution—Convergence of improper multiple integrals. At points occupied by masses of continuous density, the density satisfying a Holder condition, the potential of volume distribution is continuous and twice differentiable, satisfying Poisson's equation.

Application to the theory of attraction (Treatment as in Kellog. Ch. 1, § 1 to 7 only).

Potential of simple Distribution on surfaces satisfying the condition of Poincare, the density of distribution being continuous and differentiable. Continuity throughout space. Existence of the normal derivative. Fundamental equations.

$$\frac{dVi}{dn} = \frac{dVc}{dn} + 2\pi_{uo}\,; \quad \frac{dVe}{dn} = \frac{dVo}{dn} - 2\pi_{uo}.$$

Potential of double distribution the moment being continuous and differentiable, the surface verifying the condition of Poincare. Fundamental equations

$$Wi = Wo + 2\pi_{uo}\,; \quad Wc = Wo - 2\pi_{uo}.$$

Application to electrostatics and elementary magnetism. (Syllabus defined by Kellog, Ch. III, § 6 and 7 only, Ch, VII, §1 and 2 only).

Logarithmic Potentials—Fundamental properties. Relation to Newtonian Potentials and to the theory of analytic functions. Their discontinuities and their harmonic continuation.

Harmonic Functions—They are analytic. Mean value Theorem of harmonic functions. Absence of extremum in domains. The Dirichlet problems, uniqueness of its solution. Green's function. Method of electric images. Poisson's integral. Solution of the Dirichlet problem for the circle and for the sphere, when the boundary values are continuous. Harnack's first and second theorems.

The Method of "Balayage" (sweep-out) of Poincaré in two and three dimensions. (Syllabus strictly defined by Poincaré, Potentials Newtoniens, Ch. VII, and Picard, Analyse, Tome II, Ch. IV.)

Application to the theory of conformal representation of a domain, whose boundary satisfies the condition of Poincare, on a circle. (Treatment as in Kellog, Ch. XII. §12).

Books for Reference.—

H. Poincaré: Potentials Newtoniens.
O. D. Kellog: Foundations of Potential Theory.
E. Picard: Traite d'Analyse, Tome II.
C. Jordan: Cours d'Analyse, Tome II.
E. Goursat: Cours d'Analyse, Tome III.
Courant and Hilbert: Methoden der Mathematischen Physik.

(14) HYDRO-DYNAMICS.
IRROTATIONAL MOTION OF LIQUIDS.

Detailed Syllabus.

Preliminary—

Eulerian and Lagrangian variables. Velocity, acceleration. Steady motion. Analysis of the motion of a fluid element. Stream lines, paths of particles, vortex lines. Irrotational motion; velocity potential ϕ. Flow and circulation. Stokes' theorem. Cyclic and acyclic motion. Green's theorem.

Equation of continuity. Boundary conditions.

Equation of Continuity. Boundary Conditions.

Equations of motion and general theory—

Eulerian equations of motion. Equation of energy. Pressure equation. Torricelli's theorem. Equations of impulsive motion; impulsive pressure in irrotational motion. Helmholtz's equations of vortex motion. The circulation theorem; permanence of irrotational motion. Lagrangian equations of motion. Cauchy's integrals.

General theorems on irrotational motion. Mean value of ϕ over a spherical surface. Expression for the kinetic energy. Uniqueness of solution when boundaries have prescribed velocities or are subject to given impulses. The minimum energy theorem. Representation of motion by means of surface distributions.

Motion in two dimensions:—

The stream function ψ. Irrotational motion. Conjugate functions Sources and sinks. Method of images. Use of conformal

transformations (Schwarz Christoffel theorem and its applications are excluded). Motion of circular and elliptic cylinders in liquid. Instantaneous motion of liquid between coaxial circular cylinders or confocal elliptic cylinders. General formulae for ψ at the boundary of a cylindrical body in motion; applications. Formulae for the force and couple on a fixed cylinder in a steady stream. The lift due to circulation.

Motion in three dimensions—

Image of a source or a radial doublet in a sphere. Motion of a sphere in liquid; initial motion of liquid between concentric spheres. Symmetry about an axis; Stokes' stream function ψ; equation for ψ in irrotational motion; solutions in polar co-ordinates. Ellipsoidal co-ordinates. Translation and rotation of an ellipsoid, including its degenerates.

Motion of solids in liquid—

Equations of motion of simple solids in liquid (excluding cases requiring the use of formulae for moving axes in three dimensions). Approximation to the motion of (1) a sphere in liquid with a plane boundary, (2) two spheres in an infinite liquid.

Waves—

Long waves. Surface waves; waves at the surface separating two liquids. Capillary waves.

Book recommended for study—

Ramsay's Hydrodynamics, Chapters I to V, Chapter VI (restricted), Chapter VII, Chapter VIII (restricted) and Chapter X.

Books for Reference—

Lamb: Hydrodynamics.

Appel: Mecanique Rationale, Tome III.

Basset: Hydrodynamics (out of print).

Revised Syllabus in Applied Mathematics.

(To take effect from the Examination of March—April 1951).

(5) *Kinematics and Dynamics.*

Vector Algebra and Analysis. Localised and non-localised Vectors. Sum and Products of Vectors. Moment of a localised Vector. Differentiation of a Vector. Scalar and Vector Fields: Gradient, Divergence, Curl Stokes's Theorem, Green's Theorem.

Kinematics of a Particle. Velocities and Acceleration. Hodograph. Resolution in Cartesian and Polar co-ordinates and along tangent and normal paths. Moving axes.

Kinematics of a Rigid body. Degrees of Freedom. Translation and Rotation. Motion in a plane. Instantaneous centre of rotation. Motion about a fixed point: composition of angular velocities; centrodes. Screw Motion, central axis.

Dynamics of a Particle:

Laws of Motion. Work, Energy, Impulse, Impulsive Forces, Equation of Energy, Units.

Rectilinear motion; Constant acceleration; Simple Harmonic Motion; Damped and Forced oscillations. Various laws of resistance.

Motion in a plane. Motion of a projectile in vacuo, in a resisting medium. Central forces. Differential equation of orbits for various laws. Laws of Inverse Square; construction of orbit; Time of describing an arc. Kepler's Laws. Apses. Stability of circular orbit. Perturbations.

Constrained motion. Motion on a fixed smooth or rough curve. Motion on a smooth or rough cycloid. Small oscillations of a simple pendulum in vacuo; under resistance varying as the velocity and as the square of the velocity.

Motion in three dimensions. Motion on a smooth surface of revolution. Motion in a smooth curve revolving uniformly.

Dynamics of a system of Particles and of a Rigid Body:

Moments and Products of Inertia. Principal Axes of Inertia. Momental ellipsoid, Momental ellipse. Equimomental systems. D'Alembert's Principle. General equations of motion for finite forces and for impulsive forces. Independence of translation and rotation. Principles of conservation of Linear and angular momentum and of energy.

Motion about a fixed axis. Compound Pendulum. Bifilar suspension. Torsional oscillations. Reaction on the fixed axis. Impulsive forces, centre of percussion. Forced oscillations of a pendulum. Seismographs.

Motion in two dimensions. Finite forces, Impulsive forces. Impulsive motion of a chain.

Motion about a fixed point. Euler's equations. Spinning Top, Gyroscope.

Lagrange's Equations. Systems with one and with two degrees of freedom. Fundamental Periods of Oscillation about equilibrium. Normal co-ordinates.

Principle of Least Action; Hamilton's Principle (simple treatment as in Max Planck's General Mechanics § § 121, 122).

(6) *Statics.*

Forces acting at a point: Reduction and conditions for equilibrium. Friction. Equilibrium of a particle on smooth and rough curves and surfaces.

Forces in one plane. Parallel forces. Moment of a force. Couples. Reduction of coplanar forces. Conditions for equilibrium. Actions at smooth and rough joints and hinges. Graphical Statics; force and funicular polygons. Centres of gravity.

Forces in three dimensions. General conditions of equilibrium. Principle of Virtual work. Stable and Unstable equilibrium.

Reduction of a system of forces. Poinsot's central axis. Wrench: screw. Resultant wrench of two given wrenches. The cylindroid Reciprocal screws. Conjugate lines. Null lines and null planes.

Equilibrium of strings. General conditions of equilibrium of inextensible string. The common catenary. The parabola of suspension bridge. The catenary of uniform strength.

Newtonian attractions and potentials of uniform rod, circular wire and disc (at a point on the axis), sphere and spherical shell.

(7) *Mechanics of Reformable Bodies.*

Homogeneous strain, stretches and shears. Strain quadric. Stress. Simple stresses. Bending moments and shearing stresses. Young's modulus. Bulk modulus. Poisson's ratio (Standard as in H. C. Plummer: Principles of Mechanics, Ch. IX).

Definition of perfect fluid. Pressure at a point. Equality of pressure at a point in all directions. General conditions of equilibrium of a fluid and of a liquid in particular. Fluid at rest under the action of (i) gravity, (ii) central forces. Rotating fluid. Resultant fluid thrust in a plane area: centre of pressure. Thrust on curved surfaces. General conditions of equilibrium of a floating body.

Standard as in the following books:

Weatherburn : Elementary Vector Analysis (Chs. I, III (excluding geometrical applications), V, VI, VII, and VIII).

Plummer, H. C. ; Principles of Mechanics.

Lamb : Statics, Chs. I—X.

Lamb : Dynamics, Chs. I-VI, part of Ch. VII, Chs. VIII,, IX and part of Ch. XIII.

Lamb : Higher Mechanics, Chs. I-IV, VII, parts of Chs. X and XII.

Ramsay : Statics.

Ramsay : Dynamics, Vol. I.

Ramsay : Dynamics, Vol. II (Restricted).

Ramsay : Hydrostatics.

Books recommended for reading :

Max Planck : General Mechanics. Translated by H. L. Buse.

A. G. Webster : Dynamics of Particles and of Rigid, Elastic and Fluid Bodies (except Chs. VIII and X).

Routh, E. J. : Statics, Vol. I.

Routh, E. J. : Dynamics of a Particle.

Routh, E. J. : Elementary Rigid Dynamics.

Earnest Mach : Science of Mechanics.

(8) *Astronomy.*

The syllabus for Astronomy to be the same as for B. A. Group (i-b).

The standard as in

Barlow and Bryan : Mathematical Astronomy revised H. Spenser Jones.

Recommended for study :

Smart : Foundations of Astronomy.

H. Spenser Jones : General Astronomy.

Branch I-B—Statistics.

SYLLABUS.

Theory of Probability.—

Definition—mutually exclusive events—logical sum and logical product—relative probability and independence—mathematical expectation—Bernoulli's Law of large numbers—Tchebycheff's theorem—the theory of dispersion—Bernoullian, Poisson and Lexis series— Application to statistical problems—random variates and theorems on expectation—characteristic functions (or moment generating functions)—application to normal distribution, Poisson distribution, rectangular distribution—application to the distribution of the mean of a random variable—Inverse probability, fiducial probability and confidence intervals.

Finite Differences.—

Symbolic operators *n*th differences of a tabulated function—different formula for interpolation, central differences and their application for interpolation—derivatives of a function in terms of differences—inverse interpolation—interpolation in tables of double entry—formula for quadrative graduation by empirical formulae.

Statistical Methods.—

Collection of data—classification and tabulation—diagrammatic representation by charts and graphs.

Single Variables.—

Measures of central tendency and dispersion.

Curve Fitting.—

Method of least squares—derivation and use of normal equations. Orthogonal polynomials—method of moments and fitting the Pearsonian family of curves, namely, normal curve, non-normal, symmetrical curves type II and type VII, asymmetrical curves types I, III, IV, V and VI. Other methods of fitting curves—Graham Charlier's curves.

Two or more Variables.—

Tests of independence and association of variables—co-efficient of contingency—different methods of estimating the co-efficient of correlation—by product moments, method by ranks, etc. The bivariate normal correlation surface—non-linear regression and correlation ratio—partial and multiple regression.

Analysis of Variance.—

Analysis of variance for *k* samples and *z* and *t* tests—analysis of variance appropriate to double and multiple classifications—

analysis of regression—randomisation—randomised blocks and Latin square layout—factorial analysis and simple examples of confounding experiments.

Estimation and Testing of Hypothesis.—

Efficient and sufficient statistics and the use of method of maximum likelihood—transformation of probability laws—derivation of fundamental distributions of χ^2, t and Fisher's z tests. Estimating the fiducial limits for the population values of arithmetic mean-standard deviation—co-efficient of correlation and regression co-efficients from samples—use of power functions in testing hypothesis—Neyman-Pearson λ criterion for testing hypothesis and its application to elementary cases of simple and composite hypothesis.

Analysis of time series.—

Finding the seasonal fluctuations and general trend. Application of periodgram analysis and other methods for finding the probable length of the periods in cyclical fluctuation.

Text-Books.—

Yule and Kendall: Introduction to the Theory of Statistics.
Tippet: Methods of Statistics.
Brunt: Combination of Observations.
Reitz: Mathematical Statistics.
Elderton: Frequency Curves and Correlation.
Whittaker and Robinson: Calculus of Observations.
R. A. Fisher: Statistical Methods for Research Workers.
R. A. Fisher: Design of Experiments.
A. Fisher: Probability.
Devy and Roth: Elements of Probability.

Papers appearing in Biometrika, Metron, Annals of Mathematical Statistics, Journal of the Royal Statistical Society and Philosophical Transactions of the Royal Society.

ELEMENTS OF GENERAL ALGEBRA.

[Compulsory subject for B.A. (Hons.) and B. Sc. (Hons.) in Statistics and optional subject for B.A. (Hons.) Mathematics].

I. Standpoint and scope of Modern Algebra. Groups and Rings, Abelian Group. Module. Transformation Group. Permutation Group. Normal sub-group. Quotient group. Homeomorphism. Isomorphism, Inner and Outer Automorphisms. Normalisator, Central. Composition series. Simplicity of the Alternating group on $n \not> 4$ symbols. Canonical basis of the finite Abelian Group.

II. Rings. Homeomorphism. Two-sided Ideals. Commutative Rings. Integrity-domain and its quotient field. Polynomia

extension of a Ring and of an integrity domain. Division Algorithm in the Polynomial ring.

The ideal—theory of the commutative ring with principal unity. Congruence. Residue—class ring or quotient-ring. Ideal-sum and Ideal-product. Principal, prime and factorless ideals.

Unique factorisation theorems in (1) principal-ideal rings, (2) Polynominal rings.

III. Commutative Fields. Prime-field. Characteristic of a field. Algebraic and Transcendental extension of a field. Algebraically conjugate fields. Zeros and factorisation of polynomials. Resolvent field of a polynomial. Cyclotomic-field. Galois Fields. Theory of Real Fields. Ordered Fields.

IV. Theory of symmetric functions. Resultant. Discriminant. Operators of the theory of symmetric functions.

V. The General Linear Associative Algebra over a field F. The Total Matric Algebra over a field F. Equivalence, similarity congruence. Bilinear and Quadratic Forms. Elementary Divisors, Canonical forms. Characteristic equation and minimal equation. Symmetric, Skew-Hermitian Matrices. Orthogonal Equivalence.

References.—

1. Vander Waerden: Modern Algebra, Erstertail.
2. Albert : Modern Higher Algebra.
3. Macmohan : Combinatory Analysis.
4. Weber's Algebra.

Branch II-A.

PHILOSOPHY.

1. General Psychology.

PART I—OUTLINES OF PSYCHOLOGY.

1. Psychology as a Science—Data, Scope and Methods.
2. Racial and Individual Origins of Behaviour Patterns.
3. Simple motives. Theory of Instincts.
4. Emotions. Their interpretation and Measurement.
5. Sense-perception. Hearing and Sight.
6. Development of Perception.
7. Attention and Discrimination.
8. Retentive Processes—Learning and Memory.
9. Theories of Learning and Memory.
10. Thought and Imagery. Concept Formation. Thought and Language.

11. Imagination and Dreams. Creative Activity.

12. Intelligence. Group and Performance Tests, Theories of Intelligence. Is intelligence innate? Distribution of Intelligence.

13. Factors in Mental Growth—Hereditary and Environmental.

14. Interrelation of Ability.

15. Development of Personality. Measurements of Personality. Theory of Personality.

PART II—CONTEMPORARY SCHOOLS OF PSYCHOLOGY.

1. *Behaviourism.*—The Laws of Conditioning. Conditioning and Unconditioning of emotional life. Behaviouristic theory of thought processes.

2. *Gestalt Psychology.*—Philosophical foundations. Phenomena of visual perception. Unity of the senses. Gestalt account of learnings and reasonings.

3. *Hormic Psychology.*—Characteristics of Behaviour, McDougall's theory of Instincts. Hormic Theory *vs.* Behaviourism.

4. *Psychoanalysis and Related Schools.*—Freud's concept of the Unconscious compared with those of Jung and Adler.

5. *Neogenitic School.*—Personal variations in Ability. The birth and growth of Knowledge. The Two-factor Theory of Intelligence.

Text-books :—

1. Gardiner Murphy : General Psychology (Harper Bros.).

2. Woodworth : Contemporary Schools of Psychology.

References :—

Skinner : Readings in Psychology.

Watson : Psychology from the standpoint of a Behaviourist.

G. W. Hartmann : Gestalt Psychology (Chapters 4, 6, 8, 10—12 and 17).

McDougall : Outline of Psychology.

Freud : Introductory Lectures on Psycho-Analysis.

F. C. Thomas : Ability and Knowledge (Parts 3 and 4).

C. Spearman : Nature of Intelligence and Principles of Cognition.

Stout and Mace : A Manual of Psychology, 5th edition, Chapters V, VI and IX.

2. (a) Syllabus in Logic and Theory of Knowledge.

[*Note.*—The following syllabus will be in force till the examination of March 1950 only].

(A) *Knowledge and Thought.*

1. Postulates of knowledge, formal and material. Relation between logical theory and functional psychology, including a detailed consideration of the antecedent conditions, datum and content of Judgment. Unity and continuity of intellectual life.
2. The central function of the knowledge-process. Image, idea and meaning as factors in logical thought. Thought and language. Names and their import. Extension and intension of terms and the doctrine of their inverse relation.
3. Nature of judgment. The various theories of judgment. Unity of judgment. Varieties of judgment and their affiliation. Negation and disjunction.
4. Nature of inference. The various theories of inference. Induction. Enumerative induction and analogy.
5. Scientific induction by perceptive analysis. Value of Mill's Experimental Methods as methods of proof.
6. Scientific Induction by hypothesis. Different forms of explanation.
7. The varieties of deductive inference. Relation between induction and deduction. Classification of the sciences. Fallacies.
8. Necessity in knowledge.

(B) *Knowledge and Reality.*

Relation of knowledge to truth and reality. The criterion of truth. Error. Theories of the relativity of knowledge. The conception of degrees of truth and reality. The ideal of Knowledge.

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2. (b) Syllabus in Ethics.

[*Note.*—The following Syllabus will be in force till the examination of March 1950 only].

1. Scope and method of Ethics. Relation to other sciences.
2. The beginnings and growth of morality—custom; conscience; systematic reflection.
3. Moral development of the individual—Childhood; adolescence; 'conversion'; 'temptation'; fixation of character. The moral and the religious life.
4. Psychology of Ethics—Analysis of the moral judgment: the situation which provokes it; the course it follows; the function of moral criteria, Motive; intention; character.
5. Constructive theory—Good and moral good. Obligation. Casuistry. The moral ideal. Discussion of the principal virtues. The moral significance of institutions: the family; the state; property and rights; punishment.

6. Critical study of ethical thought—General characteristics of Indian, Greek and European morality. Ethical systems—hedonistic, rationalistic, psychological, idealistic.

7. Metaphysics of Ethics—The ultimate validity of moral judgment. Free will and responsibility. Morality and religion.

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3. Outlines of Indian Philosophy.

The Six Dars'anas—60 lectures.

Upanishadic Basic.—

1. (1) Historical Antecedents—Mantras and Brāhmanas.

(2) Rise and development of the main currents of Philosophical thought in the Upanishads.

(3) Resultant Systems—How they emerged. Redactions in the form of Sutras. Astika and Nastika Systems.

(A) Logical Prolegomena—Pramanas and Causality.

(B) A comparative and critical study.
Avedistic systems: (Materialistic and Rationalistic—Carvaka, Jaina and Bauddha Systems).

Vedistic systems. (Supra-rationalistic systems).

II. *The Nyaya-Vaiseshika.*

(a) Epistemology: Anyathā Khyāti. Rejection of other Khyātis. Pramaṇas. Vyāpti. Truth and Error.

(b) Theory of Causation.

(c) Theory of Reality.—Categories of the vais'eshikas. Abhāva. External Relation.

(d) Cosmology. Theory of atoms. Conception of God as extra-cosmic and personal.

(e) Ethics and Religion. Nature of the Soul and its final destiny. Law of Karma. Tattvajñāna as the means to Moksha. Conception of Moksha.

III. *Sañkhya-Yoga.*—

(a) Epistemology. Pramāṇas.

(b) Theory of Causation. Satkārya-Vāda.

(c) Theory of Reality. Purusha and Prakṛti. Their relation. Plurality of Purushas.

(d) Cosmology. Pariṇāma. Evolution and Involution.

(e) Ethics and Religion. The Guṇas. Bandha and Moksha. The practice of Yoga.

The attitude of Kapila and Patañjali to the Existence of God. Conceptions of Kaivalya.

IV. *Purva-Mimamsā.*—

(a) Epistemology. Bhaṭṭa's Viparitakhyāti. Prabhakara's. Akhyāti. The Pramāṇas.

(b) Psychology. The theory of the Ātman.

(c) Ethics. Karma. Dharma and Adharma. The theory of apūrva.

V. (a) *Uttara-Mimāṃsā* or *Vedānta*. Different schools of Vedānta.

(1) *Advaita* :—

(a) Epistemology. Pramāṇas. Idealistic Theory of Knowledge. The doctrine of error. Anirvacaniya-Khyāti. Adhyāsa.

(b) Theory of Reality. Kinds of Reality: Prātibhāsika, Vyāvahārika and Paramārthika. Brahman devoid of qualities, the only reality. Māyā, Avidyā, Is'vara, Jiva.

(c) Cosmology. Pariṇama and Vivarta.

(d) Psychology. The nature of the Jiva. Avasthātraya.

(e) Ethics and Religion. Karma. Upāsanā and Jñāna. Sādhana-Catushtaya, as steps to moksha. Conception of moksha—Jivanmukta.

(2) *Vis'istadvaita* :—

(a) Epistemology. Pramānas. Yathārtha-Khyāti. Nature of error.

(b) Theory of Reality. The absolute as Personal God. Cit and Acit. Apṛthaksiddha-Vis'eshana. S'ariri. S'ariri-Sambhandha.

(c) Cosmology, Meaning of causality. Immanence and transcendence.

(d) Psychology, The nature of the Jiva as Aṇu. Its characteristics.

(e) Ethics and Religion. Bhakti and Prapatti, the direct means to Moksha. Nature of Mukti.

(3) *Dvaita* :—

The realistic view of knowledge. External relations. The absolute as Personal God. Cit and Acit. The theory of eternal distinction of Is'vara, Cit, and Acit. The denial of immanence. Nature of Mukti.

(b) Comparative and critical review of the three schools of Vedānta.

VI. *S'aiva Siddhānta* Āgamic basis.

(a) Epistemology. Truth and error. Satkāryavāda.

(b) Theory of Reality. The three ultimate realities—Pati, Pasu and Pās'a. Nature and characteristics. S'iva. Sakti.

(c) Cosmology. God as the efficient cause.

(d) Ethics and Religion. Means of attaining Moksha. Nature of Mukti.

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4. European Philosophy from Descartes to Kant.

(COMPULSORY COURSE.)

Brief characterisation of the Renascence. Influence on philosophy of the discovery of the laws of motion and of the scope for mathematical determination in experimental method. Descartes and the Method of Doubt. Dualism of Mind and Matter. Proofs of the existence of God. Occasionalism. The concept of substance in Descartes and Spinoza. Attribute, mode and infinite mood. The principle that all determination is negation. Nature of Spinoza's Absolute, whether ultimate ground or maximal reality. His Parallelism. Necessity and freedom. Attitude to teleology. Intellectual love of God. Leibniz's attempt to find room for the many in the one by taking up relations into substance, and by substituting intension for extension. Pre-established Harmony. Non-contradiction and Sufficient Reason. Best of all possible worlds. Rationalism and Sensationalism. Rise, development and bankruptcy of the 'Way of ideas' in Locke, Berkeley and Hume. Difficulty of accounting for the ideas of substance, relation, causality, and existence. Kant's demonstration that *a priori* synthesis is a pre-condition of all consciousness of objects. Consequent transformation of the Humean scepticism into an empirical realism combined with transcendental idealism. Reality intellectually inscrutable, yet validly apprehended through the consciousness of duty. God, freedom and immortality as matter of rational certainty, though not of scientific knowledge.

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5. & 6A. (b) i. Syllabus of Advaita Vedanta.

(A) History (15)—

I. Traces of Advaitic thought in the Rg Vēda, Maṇḍālas I and X.

II. Development of Advaitic thought in—

(a) The Upanishads—mainly (1) Bṛhadāraṇyakā—Yajña-valkya's discourses; (2) Chāndogyā—discourses addressed to S'vetāketu and Indra, also S'āṇḍilyā, Upakos'ala, Bhumā and Dahara Vidyās; (3) Taittiriya; (4) Kena; and (5) Māṇḍukya. ... (3)

(b) Brahma-Sutras, esp. I-i, 1 to 9 ; II-i, 14 and II-iii, 50; III ii, 3 and III-ii, 22.

(c) Bhagavād-Gītā, esp. chapters ii, v, xiii and xviii (3)

(d) Vishnu Purāna (chiefly monistic extracts considered in the S'ri Bhāshya) and S'rimad Bhagavata (Skandhas x and xi). ... (1)

III. First systematic formulation of Advaita doctrine in Gaudapada's Māṇḍūkyakārikas. ... (3)

IV. Classical exposition of Advaita doctrine in Saṅkara's work :

(a) Bhāshya on Brahma-Sūtras—esp. reference to section II (b) and Sutra IV, iii, 14.

(b) Bhāshya on Brhadāranyaka and Chāndōgya (select passages).

(c) Vivekacūḍāmani, Ātmabodha aud Upadēs'a-Sāhasri. (2)

V. Rise of divergent views as expounded in the *Sidhantalesasangraha.*

VI. Controversy with other systems—as in Madhusudana's *Advaita-Siddhi.* ... (1)

(B) *Exposition* (25)—

I. Relation to other Eastern systems Buddhism, Sāṅkhya, etc.) *Cf.* Brahma-Sutra, Sankara Bhāshya, II. ii. Relative unimportance of affinities with Western systems (Idealism, Pantheism and Monism). ... (3)

II. Theory of knowledge—

(a) The Pramānas or means of knowledge—importance of s'abda—Parā and Apara Vidyas—nature of Jñāna and its relation to Antahasraṇa and vṛtti—Theory of pratyaksha—intuition and inference (pratyaksha and paroksha) ... (3)

(b) Truth and Reality and the doctrine of three kinds of Reality (sattātraya) ... (1)

(c) Nature of Adhyāsa and theory of error (anirvacaniya-khyāti) ... (3)

III. Metaphysics—

(a) Nature of Brahman—proofs of his existence—categories of cause and substance—transcendence (neti, neti) and immanence (antaryāmitva)—saguṇa and nirguṇa vada ... (3)

(b) Nature of jivātman—plurality of jivas—their respective avidyā, karma and upādhi—nature and proof of the identity of Brahman and Ātman—bimbapratibimba-vāda and avacchedavāda ... (2)

(c) Nature of prapañca—theory of abhinnanimittōpādāna—parināmavāda and vivarta-vāda—doctrine of māyā; its history and proof; its relation to time, space and causality. ... (2)

IV. Ethics—

(a) Nature of the highest good (purushārtha)—mukti or complete freedom from māyā or avidyā—beyond good and evil—free from activity—positive aspects of Mukti—saccidānanda—Jivanmukti and videhamukti (2)

(b) Means of realization (sādhana)—vidya the one means—value of such other means as karma s'amadamādi and upāsanā—call for divine grace. ... (3)

(c) Advaita and social service (lokasangraha) ... (1)

(d) The ideal and the real—metaphysical warrant for moral endeavour—problem of free-will—morality and religion. ... (2)

(C) *Criticism—in the light of other systems, Eastern and Western (20)—*

I. Criticism of Māyā or mithyātva—charge of acosmism. ... (2)

II. Criticism of anirvācyatva or transcendence—charges of agnosticism and mysticism. ... (2)

III. Criticism of svaprakās'atva or self-knowability—charge of subjectivism ... (1)

IV. Criticism of nirguṇa vāda—charge of absolutism. (1)

V. Criticism of abhēda vāda—charge of abstract identity. (1)

VI. Criticism of jivabrahmaikya—charge of atheism and solipsism (3)

VII. Criticism of jñānasādhana or the subordination of both bhakti and karma to jñāna—charge of intellectualism (4)

VIII. Criticism of karmasamnyāsa—charge of renunciation and quietism ... (2)

IX. Criticism of kaivalya as a goal—charges of moral stultification and pessimism ... (2)

X. Criticism of Ātmarati—charge of egoism ... (1)

Note.—*The figures in brackets are offered as an approximate indication of the number of days which in a course extending over 60 lectures, might suitably be given to the various sections and sub-sections specified.*

5. & 6-A. ii. Syllabus in Saiva Siddhanta.

I. *History.*—

A. Traces of S'aivism in the Rig Veda, the Yajur Veda and the Atharva Veda. The ideas of *Rudra-Pas'upathi,* and *Stamba*-worship.

B. (i) Development of Siddhāntic thought or theism in—

(*a*) The Upanishads, especially S'vetāsvatara.

(*b*) The Purāṇas, mainly the S'aivite Purāṇas like S'ivamahāpurāṇa, Skānda and Vāyu.

(*c*) Itihāsas including the Gitā.

(*d*) Formulation of the system as indicated in the Bhāshya on the Brahma Sūtras by Nilakaṇtha S'ivācārya

(*e*) Kashmir S'aivism—the development of the Pratyabhijña system.

(ii) Ancient Tamil literature.

(*a*) Traces of S'aivite thought in Tolkāppiyam, Tiruvalluvar and Saṅgam literature.

(*b*) Growth of devotional literature in the Jaina and Buddhistic period. The rise of the Samayācāryas.

(*c*) Rise of modern S'aivism: The Santānācāryas. Systematization of worship in the Āgamas.

The fusion of the divergent currents of S'aivism in the Siddhānta.

II. *Theory of knowledge.*—

Pramānas—Sense-perception. Reasoning and Authority. *Parā* and *aparā-vidyās.* Theories of Truth and Error (Pramā and Bhrama).

III. Metaphysics. The three ultimate Realities: Pati, Pas'u and Pās'a. Vis'ishṭādvaitic tendency.

Satkārya-Vāda. The idea of causation. Criticism of other theories. Conception of God S'iva and S'akti. God as the efficient cause. Attributes of S'iva and S'akti.

(*a*) Nature of Pati.—Criticism of *Nirguṇa-Vāda.* Divine motherhood and the redemptive principle of grace, Criticism of the doctrine of *Avatāra.*

(*b*) Nature of Pas'u:—S'aiva S'iddhānta psychology. Plurality of Souls—Characteristics of the Soul—Its relation to God—Soul as *Sad-asat.* Classification of Soul's Avasthās.

(*c*) Nature of Pās'a—The three-fold character—Āṇava, Māyā and Karma—The Thirty-six tattvas and their relation to the Soul.

(*d*) Elements of realism in S'aiva S'iddhānta.

IV. *Ethics and Religion*—

(*a*) The highest Purushārtha : Mukti or redemption.

(*b*) Means of attaining salvation (caryā, kriyā, yoga, jñāna, dikṣā).

(*c*) The meaning of moral and spiritual endeavour—Karma and redemption.

(*d*) The nature of mukti—*Ātma Dars'ana* and *S'iva Dars'ana*—Its contrast with the theistic and Advaitic ideal. (The four stages of mukti).

V. Critical study of the inter-relations of S'aiva S'iddhānta, Advaita and Vis'ishtādvaita, as also the inter-relations of the various schools of S'aivism.

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5. & 6-A. (b) iv. Syllabus in Visishtadvaita.

I. *History*.—

(i) Germs of Vis'ishṭādvaita in the Ṛg Veda.

Development of Vis'ishṭādvaita in—

A. The Upanishads, especially Ghaṭaka S'rutis.

1. Bṛhadāraṇyaka (Maitreyi and Antaryāmi Brāhmaṇās).
2. Chāndogya, VI, VII, VIII Adhyāyas.
3. Taittiriya (Mahānārāyana Upanishad).
4. S'vetās'vatara.
5. Kaṭha.

B. Brahma Sūtras and the Bhagavad Gitā with the related works by Bodhāyana, Taṅka, Dramiḍa, Yāmuna and Rāmānuja.

C. Vishṇu Puraṇa, II, V, VI. books.

(ii) Pāñcarātra. Systematization of worship in the Mahābhārata. Veānta Sūtras—The development of the Bhāgavata religion and its relation to Vis'ishtādvaita.

(iii) Tamil Literature.—

(*a*) Growth of devotional literature, S'aṅgam literature. The Ālvārs—Guruparamparā, Nammālvār, the chief expounder.

(*b*) The rise of S'ri Vaishṇavism. The earliest formulation of the system by Yāmunācarya.

(iv) The fusion of the divergent currents in the Sidhānta and its classical exposition by Rāmānuja.

(v) The rise and growth of sub-systems.

(vi) Contributions of Vedānta Desika and Pillai Lokācārya to Vis'iṣṭādvaita.

II. *Theory of knowledge.*—

(*a*) Pramāṇas or the means of knowledge-*S'abda, Anumāna* and Pratyāksha—Correlation as opposed to contradiction—Importance of *S'ābda*—The Mimāmsaka doctrine justified—The equal validity of all Vedic texts—The relation of *Sabda to Āptavākya* and intuition.

(*b*) *Satkāryavāda* or realism. The doctrine of Pañcikaraṇa (Brahma Sūtras III—1-3). The Theory of immanent causality.

(*c*) Nature of error (*Yathārtha-khyati*). The Theory of continuity of *Avasthas* as opposed to that of contradiction (*mithyā*). The meaning of illusions and dreams in terms of ethical realism. Criticism of the doctrine of *Māya.*

III. *Metaphysics.*—

Conception of Vis'ishṭādvaita; nature of Brahman—Brahman as the immanent cause of cosmic evolution—Criticism of *Vivarta-vāda*—The absolute as the self-differentiating unity and as personality—The doctrine of *apṛthaksiddha-viseṣana.* Sāmanādhikaranya — Criticism of the—*Nirguṇa-vāda*—The characteristics of Brahman—The theory of incarnation—*Brahman, Cit and Acit*; eternal but not external; *Cit* and *Acit* as the *Prakāra* or mode of *Iṣvara*—Nature of *Acit*—Categories and characteristics—Meaning *S'uddha Sattva* or *Aprākṛta* and time.

IV. *Psychology.*—

The nature of Jivātman as personality, persisting as a separate being in the four states of waking, dream, sleep and release—Its distinguishing qualities—cognition, conation and feeling (*jñatṛtvam, kartṛtvam,* and *bhoktṛtvam*)—The distinction between substantive intelligence (*dharmibhūta-jñānā*) and attributive intelligence (*dharmabhūtajñana*).

The Jiva as *Aṇu* or monadic as distinct from Is'vara who is *Vibhu.* The three classes of souls.

V. *Ethics*—

(*a*) The moral freedom of the finite self as a distinct personality and not a mere *vis'eṣaṇa*—Criticism of the Mimāmsaka doctrine of the Vedic imperative—Moral freedom and divine necessity reconciled.

(b) Is'vara as Nārāyaṇa—Niyanta or moral ruler of the universe. The doctrine of karma—Transcendental immanence, criticism of *bhedabhedha vāda*—Karma yoga as worship of God without desire for fruits—Service as the supreme good.

(c) Is'vara as Nārāyana and S'rī—The doctrine of redemption and grace—*karma* and *kṛpa* reconciled.

VI. *Religion.*—

(a) The doctrine of *S'arīra-S'arīra-Sambandha*—Logical immanence and ethical transcendence, reconciled in the idea of Jiva as a body of Is'vara—The aesthetic idea of God as *Ānandamaya.*

(b) Requisite of *Mumukṣutva*—Progressive spiritual discipline in *Karma yoga, Jñāna yoga. Bhakti yoga* and *Prapatti*—Karma and Jnāna reconciled—The relative values of *Bhakti* and *Prapatti*—Ālvar's mystic yearning for God.

(c) Nature of *mukti* as the highest good or freedom from *avidyā* as well as *pāpa*—Criticism of *Jivanmukti* and *Aikyavāda.* The relative values of *kaivalya* and God-Realisation—*Dvaita* and *Advaita* (Theism and Pantheism) reconciled.

VII. Affinities with other philosophical systems, more especially with Prabhākara and Jaina Systems.

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5. & 6-A. (c) Syllabus in Greek Philosophy.

(*Note*:—The following syllabus will be in force till the examination of March 1950 only).

A. Development of Greek Cosmological Metaphysics.—

Historical and Psychological study of conditions under which philosophic speculation arose in Greece and her colonies. Examination of claims of early cosmologists to be accounted philosophers. Inconsistent implications of hylozoism—as met by the Eleatics; as met by Heraclitus. Mechanistic tendency of the so-called mediators, culminating in the materialistic system of Democritus.

B. *Growth of Critical and Systematic Philosophy.*—

The sophists: in their relation to the social and political situation of their times; in relation to foregoing speculations and doctrines; in relation to further development of philosophic thought. Socratic reconstruction of rationalistic point of view already uncritically assumed by both Parmenides and Heraclitus. Plato's theory of ideas: the anomalous position in which he left sense experience and the world of nature. Aristotle's attack upon Platonic idealism—his own attempt at harmonising phenomenal and noumenal aspects of the universe.

C. *Development of Practical Philosophy—Decline of Greek Philosophic Thought.*—

Emergence of ethical interest; casuistry of sophists; constructive moral Theory in Socrates' identification of wisdom and virtue; development of concept of ideal state of Plato and Aristotle; individualistic trend of Cynics and Cyrenaics, followed by Stoics and Epicureans respectively. Increasing prestige of practical in proportion to waning of more abstract philosophic interest. Mystery cults as influencing and as displacing philosophy. Brief summary of Megaric, Peripatetic and Academic doctrines and of various Hellenistic-Roman philosophic tendencies through Philo and Plotinus.

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5. & 6-A. (d) Syllabus of Scholastic Philosophy.

I. HISTORY OF ANCIENT AND MEDIÆVAL PHILOSOPHY.

Pre-Socratic Philosophy. The Sophists. Socrates. Socratic School. Plato. Aristotle. Stoics. Epicurean and Sceptic Philosophers. Neo-Platonism. Gnosticism. Patristic and Scholastic Philosophy. Neo-Scholasticism.

Ueberweg: History of Philosophy, Vol 1.

De Wulf: History of Mediaeval Philosophy.

Perrier: Revival of Scholastic Philosophy.

II. LOGIC.

Logica Minor (Formal Logic):—Defintion; Fundamental Principles; Contradiction, Identity, Causation, Excluded middle. Three operations of thought.

Simple Apprehension:—Terms; the Heads of Predicables; Definition; Division.

Judgment or Assent:—Propositions; Division, Import and various kinds of Propositions. Opposition and Conversion of Propositions.

Reasoning or Argument:—Syllogism, its Laws, Figures and Kinds of Syllogism. Formal and Material Induction, Example and Analogy; Demonstrative and Probable Syllogism, Fallacies, Method and its laws.

Logica Major (Epistemology):—The Doctrine of Universals; Truth; Criteria of Truth; Value of Testimony; Certainty; Opinion, Doubt, Error.

George Hayward Joyce: Principles of Logic.

John Rickaby: The First Principles of Knowledge.

Cardinal Mercier: A Manual of Modern Scholastic Philosophy.

III. ONTOLOGY.

Theory of Act and Potency; The Being; Finite being consists of essence and existence; the uncreated being is pure act. Possible beings. Causes of Being: Material and Formal, Efficient, Final, Exemplary.

Chief Properties of Being: One, True, Good. Notion of Evil. The Beautiful.

The Categories. The concept of substance. Notions of nature; "Suppositum" and person. Individuation.

Classification of qualities and relations. Principle of causality; kinds of causes.

Cardinal Mercier: A Manual of Modern Scholastic Philosophy, Vol. I.

John Rickaby: General Metaphysics.

IV. COSMOLOGY.

Theory of Primary matter and substantial Form. Substantial and accidental change. Virtual Existence of Elements in the Chemical compound. Modern theories discussed.

Quantity:—Continuous, Discrete. The Infinite, Place, Space, Whereness, Shape, Site.

General Properties of Bodies:—Activity, Motion, Time, the When.

Cardinal Mercier: A Manual of Modern Scholastic Philosophy, Vol. I.

John O'Neill, D.Ph.: Cosmology.

V. PSYCHOLOGY.

Definition and scope; Consciousness. Theory of the Faculties.

(a) Animal life. Sensation analysed. External senses. Internal senses. Imagination. Images, their origin; Illusions; Sleep. Theory of dreams. Sensory memory. Instinct, Impulses. Emotions.

(b) Man's life. Intellect and nature of its operations. Origin of ideas. Materialistic and subjectivist theories discussed. Free will; Determinism and absolute indeterminism discussed. Formation of Habits and Character; Mutual influence of mental and physical functions. The Subconscious.

Man's soul. Is spiritual and immortal. Union of soul and body; the soul is essentially the actual principle (form) of the human body. Other theories discussed.

James Francis Barrett: Elements of Psychology.

Hubert Gruender: Experimental Psychology.

Michael Maher: Psychology: Empirical and Rational.

VI. NATURAL THEOLOGY.

(a) Notion of God; Demonstrability and Demonstration of His existence. God's essence: actual, absolute, personal being. God's simplicity, infinite perfection; ubiquity, unicity.

(b) God's knowledge. Omniscient. Divine knowledge does not affect the freedom of the creature. God's goodness and freedom are not incompatible with the existence of evil.

(c) Creation: The World created by God. The world is neither a part nor an emanation of the divine substance. God alone can create.

Conservation. Providence, Universal and particular. Sovereignty of God and the creature's freedom. The Government of God and the presence of evil in the world.

Bernard Boedder : Natural Theology.

G. H. Joyce : Principles of Natural Theology.

R. Garrigou Lagrange : God, His Existence and His Nature.

VII. ETHICS.

Object of Ethics :—Meaning of General Ethics and Special Ethics.

(A) *General Ethics*. The natural end of Man. In the abstract and indeterminately it is happiness; in the concrete it is not in anything created but it is in God. Condition for the realization of happiness; Happiness in the present life. Other theories discussed.

Human act imputable; morally good, bad or indifferent; Rule of morality; Theories discussed.

Man not autonomous but subject to Moral Law; Nature of moral obligations; Basis of moral obligation in human nature and ultimately in the practical reason of Providence.

Sanctions; Directive and obligatory powers of conscience. Other theories discussed.

(B) *Special Ethics*. Definition of Natural and Positive Law. Rights and Duties. Origin of Rights. Kinds of Rights. Animals have no Rights, yet cruelty is bad.

(a) Rights of Individual; Respect of human life; of Liberty; of Property; Limits of Ownership; Outline, and Criticism of the doctrines of communism and collectivism. Titles to Property.

(b) Rights of the Family, Purpose and institution of marriage; Perpetuity and Unicity of the marriage bond; Relations between Family and State; Education.

(c) Rights of the State. Nature and foundation of Civil Society; Origin of Authority; Systems of Government. Rule of Authority; Limits of Sovereignty.

(d) International Rights; Nationalism; War.

Cardinal Mercier: A Manual of Modern Scholastic Philosophy, Vol. II.

Joseph Rickaby : Moral Philosophy.

E. J. Ross: A Survey of Sociology.

C. S. Devas, M. A. (Oxon): Political Economy.

5. & 6-A. (e) European Philosophy from Kant to Hegel.

(OPTIONAL COURSE).

Kant's relation to Leibniz and to Hume. Nature of the Transcendental or Critical Method. Brief consideration of the problem and conclusions of the Transcendental Aesthetic. The Metaphysical Deduction of the Categories—a brief characterisation. Careful exposition of the gist of (a) the Transcendental Deduction (Subjective and Objective) of the Categories, and (b) of the First and Second Analogies. Subjectivism and Phenomenalism in Kant. The sceptical and the idealist tendencies distinguishable in the Transcendental Dialectic. The paralogisms, the Antinomies, and the Proofs for the Being of God. The Regulative Value of the Ideas of Reason. Relation between the Critiques of Pure and of Practical Reason. Problem of the possibility of the categorical imperative. The relation between the *Supremum Bonum* and the *Summum Bonum*. The reality of freedom. General Problem of the *Critique of Judgment*. Kant's hyphothetical reconciliation of Mechanism and Teleology. Critical study of Fichte's way of transforming the Kantian Phenomenalism into an Absolute Idealism. Brief description of Schelling's advance upon Fichte. Hegel's criticism of Fichte and Schelling. Careful exposition of Hegel's identification of Logic and Metaphysics. Brief statement of the nature of the tasks to which he addressed himself in the Phenomenology, the Logic, and the Philosophies of Nature and of Spirit. Understanding and Reason. Abstract and Concrete. The Dialectic Principle. Relation of the dialectical evolution to time. The Real and the Rational. Alleged intellectualism of the Hegelian system.

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5. & 6-A. (f) Philosophical work prescribed.

1949 and 1950.

Bosanquet's Problems of Individuality and Value (Macmillan).

1951 and 1952.

"Mind and Deity" (Gifford Lectures) by John Laird (Allen and Unwin 1941).

& 6-B (a) Social and Abnormal Psychology.

(*Social*)

Scope, data and methods of Social Psychology.

Origins of Group Life. Social Character of Behaviour.

Mechanism of Social Behaviour.

Emergence of the Crowd. Analysis of Crowd Behaviour. Classification of crowds and higher groups.

The Group Spirit.

The Mind of a Nation—What constitutes a Nation. The part of leaders in national life. Essentials of national life.

Psychology of the Home. The parent-child relationship.

Psychological bases of Culture, Morality, Economic Value, Religion and Art.

Social Neuroses.

(*Abnormal*).

Standpoint, data and methods of Abnormal Psychology.

Schools of Abnormal Psychology. Theories of the Unconscious and the Subconscious.

Theories of Hypnosis and Suggestion.

Theories of Dream—Freud, Jung, Rivers, etc.

Conflict, Repression, and the Complex. Psychology of forgetting. Regression.

Delusions, Hallucinations, Exaltation and Depression.

Nature and causation of neurotic and mental disorders. Theories of Freud and Adler.

Psychological Types—Extroverts, Introverts, Cycloids and Schizoids.

Psycho-therapeutic methods—Abreaction, Free Association, Re-adjustment, etc.

Alternating and Co-conscious personalities. Porsonality and its disintegration.

Mental Hygiene. Psycho-pathology of every-day life. Wit and the Unconscious.

Text-books—(*Books for consultation only marked thus**).

1. Radhakamal Mukerjee & N. N. Sen Gupta : Introduction to Social Psychology (Heath) 1928.
*2. Thouless, R. H. : Social Psychology, (Univ. Tutorial Press).
3. McDougall, W. : The Group Mind (Camb. Univ. Press).
4. McDougall, W. : An Outline of Abnormal Psychology, (Methuen).
*5. Brill, A. A. : Fundamental Conceptions of Psycho-analysis, (George Allen).
*6. Freud, S. : Interpretation of Dreams.
*7. Taylor : Readings in Abnormal Psychology.
*8. Bernard Hart : Psychology of Insanity, (Camb. Univ. Press).

The following courses of reading are suggested but in no sense prescribed for the various subjects of the B.A. (Honours) Degree Examination :—

1. PSYCHOLOGY.

Text-books.—

1. Gardiner Murphy : General Psychology (Harper Bros).
2. Woodworth : Contemporary Schools of Psychology.

References :—

Skinner : Readings in Psychology.
Watson : Psychology from the standpoint of a Behaviourist.
G. W. Hartmann : Gestalt Psychology (Chapters 4, 6, 8, 10—12 and 17).
McDougall : Outlines of Psychology.
Freud : Introductory Lectures on Psycho-Analysis.
F. C. Thomas : Ability and Knowledge (Parts 3 and 4).
C. Spearman : Nature of Intelligence and Principles of Cognition.
Stout and Mace : A Manual of Psychology, 5th edition, Chapters V, VI and IX.

2. (*a*) THEORY OF KNOWLEDGE.

(*Books marked thus* are for consultation only*).

Bosanquet : Logic or the Morphology of Knowledge, 2 Vols.
*Bradley : The Principles of Logic.
Dewey : Studies in Logical Theory, Chapters I to V and VII.
*James : The meaning of Truth.
*Drake : Introductory Essay in Essays in Critical Realism.
*Joad : Introduction to Modern Philosophy.
Joachim : The nature of Truth.
*P. T. Raju : Thought and Reality (George Allen & Unwin).
Blanshard : Nature of Thought (Library of Philosophy, 2 Volumes).

2. (*b*) ETHICS.

Dewey & Tufts : Ethics.
Croce : The Philosophy of the Practical.
Green : Prolegomena to Ethics, Books II and III.
Moore : Principia Ethica, Chapters I to IV.
Bradley : Appearance and Reality, Chapter XXV.
Bradley : Ethical Studies.
Rogers : A Short History of Ethics.
Mackenzie : Hindu Ethics.
Hopkins : The Ethics of India.
Muirhead : Rule and End in Morals.

3. OUTLINES OF INDIAN PHILOSOPHY.

Deussen : The Philosophy of the Upanishads.
Sarvadars'ansanrgraha (English Translation by Cowell and Gough).
Chatterjee : Hindu Realism.

Thibaut : Introduction to the translation of the Vedānta Sūtras.
Radhakrishnan : Indian Philosophy, 2 Vols.
Das Gupta : A History of Indian Philosophy. Vols. I and II.
Ranade : A Constructive Survey of Upanishadic Philosophy.
Keith : The Sāṁkhya System.
Keith : Karma-Mimāmsā.
Keith : Indian Logic and Atomism.
P. N. Srinivasachari : The Philosophy of Bhedābheda.
P. N. Srinivasachari : Ramānuja's Idea of the Finite Self.
Suryanarayana Sastri : The S'ivadvaita of S'rikantha.
Suryanarayana Sastri : The Sañkhyakārikā.
M. Hiriyanna : Outlines of Indian Philosophy.
Kuppuswami Sastri : A Primer of Indian Logic.
Davies : The Sānkhya Kārika.
R. Nagaraja Sarma : The Reign of Realism in Indian Philosophy.
S. Parthasarathi : Tarkasangraha.
V. Paranjothi : S'aiva Siddhanta.
Srikara Bhasya, Ed. by C. Hayavadana Rao.
Anilbaran Ray : The Message of the Gita (George Allen & Unwin).

4. EUROPEAN PHILOSOPHY FROM DESCARTES TO KANT.

Rand : Modern Classical Philosophers (from Descartes to Kant).
Thilly : History of European Philosophy.
Adamson : Development of Modern Philosophy.
Latta : The Monadology of Leibniz.
Caird : The Philosophy of Spinoza.
Johnston : The Development of Berkeley's Philosophy.
Norman Smith : Studies in Cartesian Philosophy.
Hoffdin : History of European Philosophy.
A. D. Lindsay : Kant (Leaders of Philosophy—Benn).
Woodburne : Theory of Knowledge from Locke to Kant.

5 AND 6. LIST A.

(a) Indian Logic.—

(1) Primer of Indian Logic by Mahamahopadhyaya S. Kuppuswami Sastri.
(2) Indian Logic and Atomism by A. B. Keith.
(3) Indian Logic in the Early Schools by H. N. Randle.
(4) Nyāya Sūtras, English Translation in the Sacred Books of the Hindus.

(5) Vais'es'ika Sūtras, English Translation in the above series.
(6) The Chapter on Logical Realism in "Indian Philosophy", Vol. II, by S. Radhakrishnan.

For Consultation.—

(7) The Siddhāntamuktāvalī.
(8) The Manameyodaya, English Translation (T.P.H.).
(9) History of Indian Logic by S. C. Vidyabhushana.
(10) Buddhist Logic (2 Volumes) by Th. Stcherbatsky.
(11) The Six Ways of Knowing by D. M. Datta.
(12) The Saptapadārthi— English Translation. (T.P.H.).
(13) Tarkasaṅgraha—S. Parthasarathi.

(b) (i) *Advaita Vedanta.—*

Bṛhadāraṇyaka and Chāndōgya Upanishads with S'ankara's commentaries (English translation edited by V. C. Seshachari, Mylapore).

Bhagavad Gītā with S'ankara's commentary (English translation by A. Mahadeva Sastri, V. R. Sastrulu & Sons, Esplanade, Madras).

Gauḍapāda's Kārikās on the Māṇḍūkyopanishad (English translation by M. N. Dvivedi).

Deussen : The System of the Vedanta.

Prabhu Dutt Shastri : The Doctrine of Māyā.

S. Radhakrishnan: Indian Philosophy, Vol. II, (the chapter on Advaita).

S'ankara's Bhāshya on Sūtras, I, i, 1—4, with the Bhāmatī Catussūtrī (edited by Suryanarayana Sastri and Kunhan Raja, Adyar).

S'ankara : Vivekacūḍāmaṇi.

(ii) *Saiva Siddhānta.*

S'ivajñānabodham with the Bhāshya of S'ivajñāna Swāmigal.

Sivajñānasiddhiār.

Siddhānta Ashṭakam by Umāpati S'iva.

Jñānāmṛtam.

Siddhānta-Sārāvali.

S'rikāṇta's Bhāshya on the Vedānta Sūtras with Appaya Dīkshita's S'ivārkamaṇidīpikā.

Tevāram.

Tiruvācakam.

Tirumantiram.

S'ivatattvavivekam.

Kashmir S'aivism Series—more especially Abhinava Gupta's works and "Kashmir S'aivism" by Chatterjee.

Woodroffe: S'akti and S'ākta.

Suryanarayana Sastri: S'ivādvaita of S'rīkaṇṭha.

V. Paranjoti: S'aiva Siddhānta.

Srikara Bhasya, Ed. by C. Hayavadana Rao.

(iii) *Dvaita.*—

Course of reading will be suggested later.

(iv) *Visishtādvaita.*—

Vedārtha Sangraha.

S'ri Bhāshya, I (i) 1—4, (with Thibaut's Introduction and English Translation).

Gitābhāshya.

The 6000 Paḍi of Nammālvār's Tiruvāimoli.

McNicol: Indian Theism.

Bhandarkar: Vaishṇavism, S'aivism, etc.

T. Rajagopalachariyar: Vaishṇavite Saints.

S. Krishnaswami Ayyangar: History of South Indian Vaishṇavism.

Rahasyatrayasāra: Chapters 2 to 6.

Tattvatraya.

P. N. Srinivasachari: Rāmānuja's Idea of the Finite Self.

(v) *Sāṇkya.*
(vi) *Buddhism*
(vii) *Jainism*
} Course of reading will be suggested later.

(c) *Greek Philosophy* Do.

(d) *Scholastic Philosophy.*

(e) *Philosophy from Kant to Hegel.*—

Norman Smith: Commentary on Kant's Critique of Pure Reason.

Caird: The Critical Philosophy of Kant, 2 Vols.

Watson: The Philosophy of Kant Explained.

Ward: A Study of Kant.

Croce: The Philosophy of Hegel.

Stace: The Philosophy of Hegel.

Wallace: Hegel's Philosophy of Mind.

Reyburn: The Ethical Theory of Hegel.

Sterret: The Ethics of Hegel.

McTaggart: Studies in Hegelian Cosmology.

A. D. Lindsay: Kant (Benn).

(f) *A Philosophical work dealing constructively with the general problems of Philosophy.*—

1949 and 1950.

Bosanquet's Problems of Individuality and Value (Macmillan).

1951 and 1952.

"Mind and Deity" (Gifford Lectures) by John Laird. (Allen and Unwin 1941).

5 AND 6. LIST B.

(a) *Social and Abnormal Psychology.*—

*(Books marked thus * are for consultation only).*

Mukherjee and Sen Gupta : Introduction to Social Psychology.

Thouless : Social Psychology.

McDougall : The Group Mind.

McDougall : An Outline of Abnormal Psychology.

*Freud : The Interpretation of Dreams.

*Taylor : Readings in Abnormal Psychology.

Hart : The Psychology of Insanity.

Hollingworth : Abnormal Psychology.

(b) *Child and Educational Psychology.*

(c) *Philosophy of Religion.*

(d) *Hindu Social Thought.*

(e) *A Prescribed Period or School of Political Philosophy.*

(f) *Political Philosophy.*

[(b)–(f)] Courses of reading will be suggested later.

Note:—Till new sets of books are suggested for reading, the following books recommended for study in the respective subjects under the Old Regulations will be continued :—

Political Philosophy.—

Green : Principles of Political Obligation.

Bosanquet : Philosophical Theory of the State.

Barker : Political Thought from Spencer to To-day.

Rosseau : The Social Contract.

MacIver : Community.

Laski : Grammar of Politics.

Hearnshaw : Development of Political Ideas (Nelson).

Philosophy of Religion.—

Introductory—

Galloway, G. : The Philosophy of Religion, pp. 1—53.

Foster, G. B. : The Function of Religion.

Woodburne : The Religious Attitude.

Radhakrishnan, Sir S. : Eastern Religions and Western Thought.

I. *Historical.*—

Tylor, E. B. : Primitive Culture.

Frazer, J. G. : The Golden Bough (abridged edition).

Galloway, G.: The Philosophy of Religion, pp. 88—152.
Wundt, W: Elements of Folk Psychology, on Totemism.
Durkheim, E.: Elementary Forms of Religious Life.
Hastings: Encyclopaedia of Religion and Ethics—articles: *Animism*, *Totemism*, *Fetichism*, *Magic* and *Taboo*.
Needham: Science, Religion and Reality.

II. Psychological.—

Höffding, H.: Philosophy of Religion.

Psychology—

Galloway, G.: The Philosophy of Religion, pp. 54—87, 153—179, 219—250.
Coe, G. A.: The Psychology of Religion.
Pratt, J. B.: The Religious Consciousness.
King, Irving: The Development of Religion.

III. Logical—

Galloway, G.: The Philosophy of Religion, pp. 180—218.
Leuba, J. H.: A Psychological Study of Religion; Appendix.
Pratt, J. B.; The Religious Consciousness.

IV. Epistemological—

Galloway, G.: The Philosophy of Religion, pp. 251—370.
Caird, John: Introduction to the Philosophy of Religion, Chapters 6 and 7.
Hastings: *E. R. E.* Article on Epistemology.
Streeter, B. W.: Reality (Macmillan & Co.).

V. Metaphysical—

Galloway, G.: The Philosophy of Religion, Part III.
Kant: Metaphysics of Morals.
Ward, James: The Realm of Ends.
Taylor; Elements of Metaphysics, pp. 359—407.
Hogg, Rev. A. G.: Redemption from the World.

Note:—Students will not be expected to acquire a detailed knowledge of all the Selected Readings. Special attention will be given to the following works:—

Galloway, G.: The Philosophy of Religion.
Pratt, J. B.: The Religious Consciousness.
Woodburne: Religious Attitude (Macmillan & Co).

REVISED SYLLABUSES.

[NOTE.—The revised syllabuses will take effect from the examination of March 1951.]

Logic and Theory of Knowledge.

PART I—LOGIC AS THEORY OF INQUIRY.

A. 1. The problem of Logical Subject-matter.
2. Postulates of Knowledge—Formal and Material.
3. Common-sense and Scientific Inquiry.
4. Relation between Logical theory and Functional psychology.

B. 1. The Nature of judgment.
2. Various theories of judgments.
3. Kinds of Judgments.
4. Affirmation and Negation.
5. The continuum and unity of judgment.

C. 1. Nature of Inference.
2. The various theories of Inference.
3. Scientific method—Induction and deduction.
4. The concept of Necessity.

PART II—THEORIES OF KNOWLEDGE AND TRUTH.

A. Critical Examinations of :
1. Traditional Empiricism and Rationalism.
2. Scepticism : Self-contradictory nature of Categories.
3. Realistic Theories of Knowledge.
4. Idealistic Theories of Knowledge.
5. Instrumentalism.

B. 1. Coherence as Nature of Truth.
2. Coherence as Degrees of Truth.
3. Realistic theories of Truth.
4. Pragmatic and Instrumental theories of Truth.
5. Logical Positivism and the Concept of Necessity.

Books prescribed for close study :

1. John Dewey: Logic—A Theory of Inquiry. Henry Holt Co., New York, 1939 (omit Chs. 16 and 24).
2. Brand Blanshard : The Nature of Thought, 2 Vols.— George Allen and Unwin. 1939 (Read Vol. I—Chs. 8, 9 and 10 ; and Vol. II—Chs. 26, 27 and 30 only).
3. Bernard Bosanquet—Logic or Morphology of Knowledge.

Books recommended for reference only :—

Bradley—Essays on Truth and Reality.
Dewey—Studies in Logical Theory.
Bertrand Russell—Our Knowledge of the External World.

William James—Radical Empiricism (Essays in)—Pragmatism.
Pratt—Essays in Critical Realism.
W. M. Urban—Language and Reality.
Sellars—Essays in Critical Realism.
Ogden and Richards—The Meaning of Meaning.

Ethics.

1. Scope and methods of Ethics. Relation to other sciences.
2. Psychology of Ethics. The moral development of the individual Childhood, Adolescence. Sentiments and the formation of character.
3. The beginning and growth of morality. Totem and taboo. Customary morality. Conscience. Systematic reflection.
4. Analysis of moral judgment. Motive and intention. Character and conduct. The moral self.
5. Types of Ethical theory. Hedonistic, Rationalistic and Idealistic.
6. The right and the good. The good and the moral good. Virtues. The concept of Dharma. Casuistry.
7. The moral significance of institutions. The family, the state, rights and duties. Svadharma. Punishment and its significance.
8. Metaphysics of Ethics. Karma and moral freedom. Morality and Religion. Niskamakarma. Moral distinctions—are they absolute or relative ?
9. A brief comparative study of Indian and European Ethics.

Books for Study :—

J. S. Mackenzie : Manual of Ethics.
Seth, A. : Ethical Principles.
Westermarck : Origin and Development of Moral Ideas, 2 Vols.
Muirhead : Rule and End in Morals.
Bradley, F. H. : Ethical Studies.
*Rogers, R. A. P. : A Short History of Ethics.
*Broad, C. D. : Five Types of Ethical Theory.
*Urban, W. M. : Introduction to Ethics.
*Laird : A Study of Moral Theory.
Ross, W. D. : The Right and the Good.
*Jury, G. S. : Value and Ethics Objectivity.
Maitra, S. K. : Hindu Ethics.
Brahma, N. K. : Philosophy of Hindu Sadhana.

*These books are for consultation only.

Greek Philosophy I.

I. Historical and Psychological conditions under which Philosophic speculation arose first in the Greek Colonies, and then in Greece proper.

II. *The Mythical Cosmogonies.*

III. *The Beginning of Philosophy.*

The quest after Reality and the antinomies of Unity and Multiplicity.

(i) *The Ionian School.*—The One living principle at the origin of things.

Thales, Anaximenes, Anaximander.

The audacity and orginality of their thoughts.

(ii) *Pythagoras.*—His theory of number and the two principles of finite and infinite, to explain the world. His theory of rebirth.

(iii) *Heraclitus* :—His theory of the perpetual flux, the intelligent fire, Being and Becoming.

Distinction of two kinds of Knowledge.

The efficient cause of the multiplicity, the strife.

The principle of contradiction in Heraclitus's theory.

Religious and Ethical views.

IV. *The Eleates*:

Reaction against the Ionic School.

The nature of the one, immutable, immovable reality: Materialism or Idealism ?

Distinction between sensible and intellectual knowledge ?

(*a*) Xenophanes.

(*b*) Parmenide's Dialectical deduction of the attributes of Being.

(*c*) Zeno's Dialectics against change, space and movement.

V. *Minor Ionians*:

Attempt at conciliating the immutability of the Eleates with the sensible, given plurality.

(*a*) Empedocles's four roots—the material cause of the world.

The external efficient causes of the Cosmos: Love and Hatred.

Transmigration of souls.

Relation of his Philosophy with the principles of the previous thinkers.

(b) Anaxagoras : Relation to Empedocles.
Infinite number of elements.
The Nous (spirit) as efficient cause.

VI. *The Atomists* :

Pure materialism of the Atomists. (Leucippus—Democritus).
The rejection of efficient eternal causes.
Their doctine of causality.
The degrees of Knowledge, the subjectivity of secondary qualities.

VII. *The Sophists* :

The Sophists are products of the political, religious and social conditions of Greece, as well as of the previous Philosophical Theories, turning from Cosmology to Humanism.
(a) Protagora's subjectivism. Man the measure of all things.
(b) Gorgias' Agnosticism based on Zeno.
Criticism of the teaching of the Sophists.

VIII. *Socrates* :

His Ethical aim, and definition of Virtue.
Reason the organ of Knowledge.
His Dialectical Method : Irony and Maieutic.
The formation and value of concepts and definitions.
Position of Socrates in the History of Thought.

Greek Philosophy II.

IX. *Minor Socratic Schools* :

Partial and one sided continuation of Socrates.
Common point of agreement : Virtue is the sole end of life.
Their points of disagreement about virtue.
(a) The Megaric school and its Sophistry.
(b) The Cyrenaic school and its Scepticism.
(c) The Cynic school and its Contempt of civilisation.

X. *Plato* :

General character of his life and work.
The foundation of Platonic Philosophy.
The method of exposition in the Dialogues.

(a) His Theory of Knowledge : the senses and appearances.
The intellectual Knowledge and reality.
The ideas in themselves.

In relation to the world.

Their causality.

The Reminiscence.

The Dialectics.

(b) His Doctrine of the world.

(c) Plato's account of the Absolute. The Idea of Good and the Demi-urge.

(d) Man: the soul and its divisions.

Arguments in favour of Immortality.

Transmigration of souls.

(e) Ethics: Personal and Social.

(f) Views upon Art.

(g) Critical estimate.

XI. *Aristotle*:

General character of Aristotle's life and work.

(a) His Logic.

(b) Philosophy of Nature.

Metaphysics:

The solution of the Antinomy of unicity and multiplicity;

(c) the act and potency; the form and matter;

the four causes;

the nature and categories of Being;

the Unmoved Mover.

Man:

(d) The two principles of man.

(e) The formation of ideas.

Psychology:

The active and passive intellect.

Ethics:

(f) Personal: the Eudaemonism of Aristotle.
Social: right of private property, the City State.

(g) Critical estimate of Aristotle's Philosophy.

XII. *The Stoics*:

Logic, Physics, Ethics.

The one contribution of the Stoics: "The idea of Cosmopolitanism."

XIII. *The Epicureans*:

Physics, Ethics.
Pleasure the foundation of Morality.

XIV. *The Sceptics*:

Universal doubt.
The New academy.

XV. *Philo*:

His intuition of the transcendent God.
The Intermediaries: The Logos.

XVI. *Plotinus*:

The one, Supreme, Eternal beyond the multiplicity.
The processions, the Nous (Spirit), The World Soul.
The relations between the individual Souls and the World Soul.
The matter.
Pseudo union of the souls with matter.
The return through contemplation, the ultimate Extasis.
Possible influence of Oriental Mysticism.

General History:

Burnet: Greek Philosophy, Part I from Thales to Plato (Macmillan).

Stace: A Critical History of Greek Philosophy.

Zeller: Outlines of the History of Greek Philosophy.

F. Copleton, S. J.: A History of Philosophy, Vol. I—Greece and Rome, Burns—1944.

Reference:

Erdmann, J. E.: History of Philosophy, Vol. I.
Gomperz, Th.: Greek Thinkers, 4 Vols.—John Murray.
Ueberweg: History of Philosophy, Vol. I.

Pre-Socratic Philosophy:

Burnet, J.: Early Greek Philosophy.—Black 1920.

(*Reference*): Zeller, E. A.: History of Greek Philosophy from the earliest period to the time of Socrates. Trs. S. F. Alleyne, 2 Vols. (Longmans).

Socrates:

Sir R. W. Livingstone: Portrait of Socrates—O.U.P. 1933.
F. J. Church: The trial and death of Socrates (Macmillan).

Plato :

Demos. R. : The Philosophy of Plato (Sribner 1939).
Hardie, W. F. R. : A study in Plato (Oxford 1936).
Lodge, R. C. : Plato's Ethics.
Stenzel, J. : Plato's Method of Dialectic (Oxford 1940).
Stewart : The Myths of Plato.
Taylor, A. E. : (Plato, the Man and His Work (Methuen 1926).
,, Article on Plato in Ency. Bri., 14 edit.

Reference :—

Cornford, F. M. : Plato's Theory of Knowledge (Kegan 1935).
,, Cosmology (,, 1939).
,, Parmenides (,, 1939).
The Republic of Plato (O.U.P.)
Ritter. C. : The Essence of Plato's Philosophy (George Allen 1933).
Taylor, A. E. : A Commentary on Plato's Timaeus (Oxford 1928).
,, Platonism and its Influence (U.S.A.) 1924 English (A. Harrap).
Zeller, E. : Plato and the Older Academy (Longmans).
Jowett, B : Plato's work (5 Vol.).
Dialogues of Plato.
The Apology : Crito and Phaedo.

Aristotle :

Barker, E. : The Political Thought of Plato and Aristotle (Methuen 1906).
Case, T. : Article on Aristotle in the Enc. Brit. II Edi.
Jaeger, Warner : Aristotle—Fundamentals of the History of his Development (Oxford 1934).
Ross, Sir W. D. : Aristotle (Methuen 2nd Ed. 1930).
Taylor, A. E. : Aristotle (Nelson 1943).
(*Reference*) Aristotle and the earlier Peripatetics.

Post Aristotlean Philosophy.

Armstrong, A. P. : The Architecture of the Intelligible Universe in the Philosophy of Plotinus. (Cambridge 1940.)
Bailey, C. : The Greek Atomists and Epicurus (O.U.P.)
Bevan, E. E. : Stoics and Sceptics (Oxford 1913).
Whittaker. T. : The Neo Platonists 2nd Ed.—[Cambridge 1901.]

Reference :—

Inge, W. R. : The Philosophy of Plotinus 2 Vols. (Longmans 1928).
Taylor, T. : Select Works of Plotinus (G. Bell 1929).
Zeller, E. : The Stoics, Epicureans and Sceptics.—A History of Eclecticism in Greek Philosophy (Longmans).

Philosophy of Religion.

1. *Introduction:*

Nature and scope. Method, Psychological and Philosophical.

2. *Origin and development of religion:*

(*a*) Animism. Totemism, Fetichism, Magic and Taboo.
(*b*) Tribal, National and Universal.

3. *The psychology of religion:*

(*a*) The psychological basis of religion.
(*b*) Attitude to religion : Intellectual, moral and emotional.
(*c*) Mystic experience.

4. *The logic and epistemology of religion:*

(*a*) The authority for religion. Revelation, Reason and Intuition.
(*b*) Proofs for the existence of God.

5. *The metaphysics of religion:*

(*a*) The nature of Reality, the personality of God. God and the Absolute.
(*b*) The attributes of God. The eternal values.
(*c*) Immanence and Transcendence.
(*d*) The problem of Evil.

6. *The goal of religion—the means:*

(*a*) God-realisation. Perfection. Immortality. Moksa.
(*b*) Prayer, Devotion, Grace, Karma, Bhakthi, Jnana.

Books for study:—

Galloway, G.: The philosophy of religion.
Pratt, J. B.: Religious consciousness.
Bowmann, A.A: Studies in the philosophy of religion, 2 Vols. 1938.
*Frazer, J. G.: The golden Bough. (Abridged edition).
*Leuba, J. H.: A Psychological study of religion.
*Bergson, H: Two sources of morality and religion.
*Radhakrishnan: Eastern religions and Western thought.
*Iqbal: Philosophy of Islam.
*William James: Varieties of religious experience.
*Schmidt: The origin and growth of religions.

*These books are for consultation only.

Branch II-B—Psychology.

SYLLABUSES.

(1) General Psychology. (The same as for Branch II-A).

(2) Schools of Psychology.

1. *Behaviourism :*

1. *General.*—Meaning of behaviourism. Comparison with other psychological methods. Anthroponomy and psychology. The technique of studying animal and human behaviour.

2. *Human body.*—Bio-physical and bio-social standpoints in psychology. The neuro-physiological basis of behaviour. The parts that glands play in behaviour.

3. *Instincts.*—Attitude of behaviourism towards native and inherited tendencies (instincts). Experimental studies of the human young and the results reached.

4. *Emotions.*—Attitude towards inherited and acquired emotions. Experimental studies in emotions.

5. *Bodily habits.*—Studies in the genesis of bodily habits, retention of habits. Discarding of habits.

6. *Learning.*—Conditioning. Pavlov's experiments.

7. *Thought and language.*—The genesis and retention of language and thinking habits. Can thinking be done without words? The whole body at work when thinking takes place.

8. *Personality.*—Personality as a reflection of the genetic history of habits. Personality study belongs to the laboratory.

Books for consultation :

J. B. Watson : Behaviourism.

J. B. Watson : Psychology from the standpoint of a behaviourist.

J. B. Watson & Wm. McDougall : The battle of behaviourism.

2. *Hormism :*

1. *General.*—Psychology as based on Introspection, observation and description. Psychology as a science of consciousness. Influence of physiology on psychology. Results reached by mechanical reflex theory. Main criticism of behaviourism.

2. *Animal studies.*—Study of behaviour of the lower animals revealing degrees of purposive behaviour. The hormic theory. Tropism not an adequate theory of behaviour.

3. *Instinct and intelligence.*—Hormic theory of instincts. Habits and conditioned responses are inadequate as explanatory principles.

4. *Affection.*—Emotion, conation and impulse. Instincts and corresponding qualities of emotion. The primary and secondary emotions. James-Lange theory. The derived emotions. Feeling and its varieties. Hormic conception of pleasure and pain.

5. *Growth of intellect and cognitive structure.*—Associationist account of mental growth inadequate. The three fundamental processes of the growth of intellect. Discrimination, apperceptive synthesis and intuition. Development through association.

6. *Sentiments, conduct and character.*—Reconstruction of the theory of sentiments. Hormic conceptions of conduct and character.

7. *Review.*—Status of Hormism. McDougall and Freud. Points of affinity and discord. Extensions of hormic theory.

Books for consultation :

Wm. McDougall : Outlines of psychology.
Do. Energies of men.
Do. Social psychology.
P. S. Naidu : The Hormic theory.

3. *Factor School—Spearman :*

1. The scientific approach of mental phenomena. Sensory, cognitive and Orectic faculties. Criticism of Gestalt.

2. *Differences in individual ability.*—Historical. The monarchic, oligarchic and anarchic doctrines of intelligence. The theory of two factors. The general factor, 'G' and the specific factors the 'S's'. The energy-engine hypothesis.

3. *Personal variations in ability.*—Reasons for discrepancy between possibility and performance. The quantitative laws. Laws of span and distribution of attention, of retentivity, of inertia, of fatigue, of cognitive oscillation. Law of conation 'W' and 'C'. Alleged law of Orexis. Law of primordial potency, *i.e.*, of age, heredity, sex and health on ability. Summation of the laws of 'G' as energy and 'S's' as engines.

4. *Birth and growth of knowledge.*—Need for psychological laws. Noesis and Noegenesis. The anoegenetic processes of cognition. Clearness variation and reproductional. The three noegenetic principles. The apprehension of experience, the eduction of relation and the eduction of correlates. Eduction and Intelligence.

5. *Application of knowledge.*—Relation of complex types of knowledge to basic principles and quantitative determinants.

6. *Summary.*—Criticism of Spearman's two factors theory. Theory of Noegenesis and quantitative determinants. Comparison of Spearman's psychology with other schools. Significance of his theory from the theoretical and practical points of view.

Books for consultation:

Spearman, C: Abilities of man.
Do. The nature of intelligence and principles of cognition.
Cyril Burt : The factors of the mind.

4. *Psycho-Analytic School*:

1. *The unconscious.*—Freud's theory of the unconscious and the conscious. Jung's personal and collective unconscious. Adler's views.

2. *Instincts.*—Freud's views on instincts. His sexual theories and Jung's libido theory. Infantile sexuality. Complexes. Views of Freud, Jung and Adler. Repression.

3. *Dream.*—Technique of dream interpretation. Examples of dreams and their analyses. Wish fulfilment.

4. *Neuroses.*—Freud's theory of neuroses. Objections and modifications by Jung, Adler and others. Resistance and regression. Channels of symptom formation.

5. *Place of psycho-analysis.*—Relation to psychiatry. Psycho-analysis and morality and religion.

Books for Consultation:

Freud, S. : Introductory lectures on psycho-analysis.
Do. Interpretation of dreams.
Do. Psychopathology of everyday life.
McDougall : Outlines of abnormal psychology.
Ives Hendrick: Facts and theories of psycho-analysis.
Clifford Allen: Modern discoveries in medical psychology.
Jung, C. J.: The modern man in search of a soul.
Adler: Science of living.

5. *Gestalt*:

1. *Historical.*—Origin and development. Early contributors to Gestalt psychology.

2. *Theoretical.*—The physical, physiological and philosophical foundations of Gestalt theory. Variations of Gestalt theory.

3. *Empirical* studies in the phenomena of visual, auditory and tactual perceptions. Configurationist principles. Memory processes and experiments relating to these. Application of Gestalt principles in learning, thinking, reasoning and insight. Theoretical and experimental studies in action, emotion and will. Kurt Lewin's theory of psychic tensions, reward and punishment.

4. *Criticism.*—Criticism of Gestalt theory by other schools. Gestalt's defence and the school's present status.

Books for consultation:

George W. Hartmann : Gestalt psychology.
Source book of Gestalt psychology.
Koffka, K. : The growth of the mind.
Do. Principles of Gestalt psychology.
Kohler, W. : Gestalt psychology.
Do. Mentality of Apes.
Bruno Petermann : The Gestalt theory and the problem of configuration.

Books for study for the entire syllabus in Schools of psychology.—

Woodworth, R. S. :	Contemporary schools of psychology.
Fluegal :	Hundred years of psychology.
Carl Murchison :	Psychologies of 1930.
Edna Heidbreder :	Seven psychologies.
Garrett :	Great experiments in psychology.

(3) Social Psychology.

1. *Scope and Standpoint of Social Psychology*—Relation to anthropology.

2. *Nature of Personality—Personality in Social and Cultural Setting.* Bases of social life at pre-human levels.

Interplay of culture and personality.

Constitutional foundations of the individuals determining drives, emotions and goals—The role of heredity and environment in social-cultural conditioning.

Human learning—Nature and types of learning—Organization of learning.

Mechanism of personality and modes of social interaction.

The origin of the self—Child and its parents—Emergence of the social self—Rise of the moral self and its functions—The social types of personality.

Culture influences on thought content and processes—Culture influence on perception, conception and memory—Fantasy and logical thinking—Development of thought and language and their interaction.

Function of the stereotypes and the psychology of myths and ideologies.

The psychology of dominance and leadership—Dominance in human and sub-human groups—Interpretation of leadership—Trait or type approach—Dominance determined by social-cultural interaction—Leadership and followership.

3. *Human Conflicts.*

Prejudice as one of the agents—Its psychological features—Colour prejudices—National prejudices—International prejudices—Prejudices in religious, political and economic groups—Alleviation and redirection of prejudices.

The psychology of revolution.

The psychology of War—Military leadership—Military morale.

Civilian activities in War—Civilian morale—Readjustment of the soldier to post-war conditions—Personality as it is affected by war.

4. *Mass Behaviour :*

The nature, psychology and behaviour of crowd—Types of crowd and mechanism of crowd formation. The nature and psychology of the audience—Types of audience.

The nature of fashion, fad and craze—Their psychological features and social function.

Public opinion—Its nature, psychological features and social cultural functions—Studies in the recording and measuring of public opinion.

The role of the newspaper, the radio and the motion-picture as media of opinion formation.

The psychology of propaganda.

Aspects of propaganda in world war I and II.

General features of social control and the use of power.

5 *Nationhood :*

The mind of a nation. What constitutes a nation ? Essentials of national life. The part of leaders in national life.

6. *Social Neurosis :*

Text-books :—

Kimball Young : Handbook of social psychology, 1946.

McDougall, W. : The group mind.

Mukerjee, R. & Sen Gupta, N. N. : Introduction to social psychology.

Books for Reference :

Kimball Young : Social psychology—An analysis of social behaviour.

Kimball Young : Source book for social psychology.

Wm. McDougall : Introduction to social psychology.

Carl Murchison : Handbook of social psychology.

Brown, J.F. : Psychology and the social order.

Reinhardt, J.M. : Social psychology.

Bernard, L.L. : Introduction to social psychology.

Wm. McDougall : Psycho analysis and social psychology.

(4) Psychopathology and Mental Hygiene.

I. *The field of psychopathology and its importance.*—Present day views of mental disorders. Theories of the Unconscious. Social and economic importance of mental disease.

II. *Originating and maintaining causes of nervous and mental diseases.*—The role of instincts, emotions, wishes and fundamental urges—Effect of these on physiological functions—Sex, reactions and egoistic tendencies—Conflicts, repressions complexes, amnesias and anaesthesias. Vague fears and anxieties. Escapes from reality, projection, rationalisation, regression, compensation, malingering—Heredity as a factor in mental abnormalities—Dissociation and types of dissociation—Theories of Janet, Freud, Jung, Adler, Kretschmer and Kraepelin. Organic and functional disturbances.

III. *Nature, classification and description of mental diseases.*—The importance of classification—comparison of neuroses and psychoses.—Division of psychoses into Organic, Toxic, Functional and Constitutional.

Organic.—General paresis, Senile psychoses. Psychoses due to cerebral arterioscleroses, Epilepsy, Brain tumors, Psychoses due to encephalitis and head trauma, Huntington's chorea.

Toxic.—Alcoholic and other toxic varieties.

Functional.—Psychoses and psychoneuroses. Mania depressive, Schizophrenia, Involutional melancholia, Conversion hysteria, Neurasthenia, Anxiety reactions, Paranoia, Paranoid symptoms and conditions, Obsessions and compulsions, illusions, Hallucinations. Delusions, Phobias, Fugues.

Constitutional.—Physical and constitutional defects. Tics and stereotypes, Intellectual defects (Feeblemindedness), Instinctive and emotional deficiency, Psychological types—Extroverts and Introverts, Cycloid and Schizoid, the Pyknic and the Leptic (asthenic), Psychopathic inferiority.

Psycho-Somatic diseases.—Insomnia, Headaches, Hypertension. Respiratory tics, Urinary frequency, Colitis, ringing in ears, etc., Errors in speech, writing, motor disturbances, automatisms.

Perversions of sex.— Oedipus complex, Electra complex. Unsuspected impotence, sadism and masochism. Homosexual tendencies. Repression of masturbation. Sex frigidity.

Dissociation of personality.—Somnambulism. Multiple personality. Trance personality. Alternating and Coconscious personality. Functioning of dissociated and unconscious elements.

IV. *Diagnostic methods.*—Neurotic inventories, Use of psychogalvanic meters. Inkblot tests, Association tests.

V. *Psycho-analytic and therapeutic measures.*— Technique of analyses. Socio-psycho-biological analysis. Dream analysis

and symbolism. Direct discussion, resynthesis, free-association, persuasion, readjustment, Technique of treatment by tasks. Changing of attitudes. Sublimation. Adjuvant therapy. Rapport. Suggestion, Drugs and hypnosis. Catharsis-Hypno-catharsis. Abreaction. Transference. Alleviation of stress. Moral support. Recreation. Occupational therapy. Shock therapies. Prefrontal lobotomy.

VI. *Psycho-pathology of war.*—Neuroses in civilian population. War and the soldier. Impact of war. Neurotics in war time.

VII. *Mental Hygiene.*—Origin and objectives of mental hygiene. Principles. Prevention of mental infirmities, Education in mental health. Educating the public to face facts. Therapy of civilian attitudes. Mental hygiene in educational institutions. Socialization, work, leadership, psychiatric social service. Guidance clinics.

Books for Study :—

W. S. Taylor : Readings in abnormal psychology and mental hygiene.

Wm. McDougall : An outline of abnormal psychology.

Edward A. Strecker : Fundamentals of psychiatry.

Fisher, V. E. : An introduction to abnormal psychology.

Dr. K. Horney : New ways in psycho analysis.

S. H. Kraines : The therapy of the neuroses and psychoses.

W. H. R. Rivers : Instinct and unconscious.

P. M. Lichtenstien & S. M. Small : A handbook of psychiatry.

C. P. Blacker : Neurosis and the mental health services.

William Brown : Psychological methods of healing.

Charles Berg : War in the mind.

Ernest R. Groves & Phyllis Blanchard : Introduction to mental hygiene.

Freud : Psychopathology of everyday life.

Brill, A. A. : Fundamental conceptions of psycho-analysis.

Do. Psycho-analysis, its theories and practical applications.

Karen Horney : Our inner conflicts.

Clifford Allen : Modern discoveries in medical psychology.

Optional Subjects.

EXPERIMENTAL PSYCHOLOGY.

Theory and Practical.

THEORY.

Introduction.—Scope of experimental psychology. Conditions of experiment in psychology. Experimental and introspective methods. Brief history of experimental psychology with reference to classical experiments. Individual differences.

Elementary statistics and psychometry.—Measurements in psychology. Psycho-physical methods. (Identity and difference). Frequency distribution. Graphic methods and normal curve. Reliability of measures. Correlation.

Sensation.—Analysis of visual and auditory sensations. Colour mixture. After images. Pitch discrimination, beats, etc. Theories of colour vision and of hearing. Cutaneous sensibility. Thermal pressure and pain spots. Identification and analysis of taste and olfactory experiences. Absolute and differential threshold experiments on colour sensitivity, loudness and weight lifting.

Attention.—Span, fluctuation, division, distraction. Sustained attention (conditions).

Perceptions.—Visual perception of size, depth, direction and form. Figure and Ground. Errors of perception. Estimation of time intervals, effects of pause, surprise, expectation, etc. Aesthetic perception. Aesthetic judgment. Colour and form preferences. Analysis of the beautiful and the humorous.

Learnings.—Nature of the learning process. The learning curve. Factors influencing efficiency of learning. Transfer of training. Interference and retroactive inhibition.

Conditioned reflexes.—Pavlov's and Watson's experiments. Types of conditioning. Conditioning of emotional behaviour and development. Unconditioning.

Memory.—Experiments in memory. Bartlett's experiments. Recall and recognition. Measurement of retention. Preservation. Forgetting. Curve of forgetting. Effects of emotional experiences on memory processes. Free and controlled association.

Imagery and imagination.—Types of imagery. Types of images. Fertility of imagination. Constructive ability. Imagination and invention. Imagery and thought.

Reaction time.—Simple and choice reaction. Factors influencing speed of reaction. Associative reaction time.

Feelings and emotions.—Elementary and mixed feelings. Methods of impression and expressions. Vocal and facial expressions of emotions. Bodily changes in emotion. Psycho-galvanic reflex. Emotions and motives. Strength of innate motives.

Intelligence.—Theories of intelligence. Concept of I. Q. and its constancy. Measurement of intelligence. Group tests and individual tests. Verbal and non-verbal tests.

Thought process.—Concept formation. Reasoning. Problem. Solving situations.

Personality traits.—Methods of study. Personality traits. Personality types. Measurements of traits. attitudes, emotional stability, vocational aptitudes, etc.

PRACTICAL

(Syllabus will be suggested later.)

Books recommended for Study :

Collins & Drever : Experimental psychology.
Myers, C. S. : Text-book of experimental psychology, Vols. I & II.
Woodworth, R. S. : Experimental psychology.
Craft & Others : Recent experiments in psychology.
Garret, H. E. : Great experiments in psychology.
Boring, E. : A history of experimental psychology.
Valentine : Introduction to experimental psychology.
Whipple : Manual of mental and physical tests.
Foster and Tinker : Experiments in psychology.
Guilford, J. P. : Laboratory studies in psychology.
Scheidmann : Experiments in general psychology.
Bills : Experimental psychology.
Wynn Jones : Theory and practice of psychology.
Kline and Kline : Psychology by experiment.

Branch III—History.

HISTORY OF INDIA.

(COMMON TO BRANCHES III AND IV).

In addition to books recommended for consultation for B.A. (Pass), the following books are prescribed :—

Marshall—Mohenjo Daro (Chaps. 1—8).
Smith—Early History of India.
The Cambridge History of India.
Lee Warner—The Native States of India.
Ramsay Muir—The Making of British India.
The Butler Committee Report.
Montague and Simon Reports and connected papers.

ENGLISH CONSTITUTIONAL HISTORY.

Syllabus.

Candidates are expected to show a critical knowledge of sources. In addition to the books recommended for the Pass Degree, the following books are recommended so as to bring out the scope of the subject :—

Adams : English Constitutional History.
Medley : English Constitutional History.

White : The making of the English Constitution to 1485.

Wakeman : Constitutional Essays.

Stubbs : Select Charters (Introduction).

Prothero : Select Documents illustrative of the times of Elizabeth and James I (Introduction).

Tanner : Tudor constitutional documents.

Tanner : English constitutional conflicts of the 17th century.

Gardiner : Select documents of the Puritan Revolution (Introduction).

Robertson : Select statutes, cases and documents.

Dicey : The Privy Council.

Dicey : The Law of the Constitution.

Percy : The Privy Council under the Tudors.

Davis : George III and the Constitution.

Pollard : Evolution of Parliament.

Pollard : Factors in Modern History.

Bagehot : The English Constitution.

Blauvelt : The growth of the Cabinet.

Hewart : The new Despotism.

Muir : How Britain is governed.

Lowell : Government of England.

Robson : Administrative Law.

Keir and Lawson : Select cases in Constitutional Law (O. U. P.)

Adams and Stephens : Select Documents of English Constitutional History.

E. Asirvatham : Political Theory (2nd edition).

Joliffe : A Constitutional History of England in the Middle Ages.

Keir : English Constitutional History of Modern England.

LIST OF DOCUMENTS IN CONSTITUTIONAL HISTORY.

N.B.—The numbers in brackets refer to the numbers in Adams and Stephens : Select Documents of English Constitutional History (Macmillan). "Robertson" refers to C. Grant Robertson : Select Statutes, Cases and Documents (1935 edn.) (Methuen).

Stubbs Select Charters. { Laws of Alfred.
Edgar—Ordinance of the Hundred.

Adams and Stephens :

[1] Ordinance of William I separating the Spiritual and Temporal Courts.

[4] Typical Domesday Entries.

[7] Henry I's Charter of Liberties.

Adams and Stephens—*contd.*

[10 and 11] Stephen's two Charters.
[13] The Constitutions of Clarendon.
[14] The Assize of Clarendon.
[16] Assize of Northampton.
[17] Assize of Arms.
[19] Ordinance of the Saladin Tithe.
[20] The Writ of Praecipe.
[21] Form of Proceeding on the Judicial Visitation.
[29] Greater Charter of Liberties.
[33] 1254. Writ of Summons.
[34] Provisions of Oxford.
[38] Grant of custom on wool, woolfells and leather.
[40] Statute of Mortmain.
[42] Statute of Westminister II.
[45] Statute of Westminister III.
[46] Writ of Summons to Parliament.
[48] Confimatio-Cartorum.
[51] The New Ordinances.
[53] Revocation of the New Ordinances.
[55] Articles of Accusation against Edward II.
[61] Inquiry into accounts.
[72] The Statute of Treasons.
[75] Protest of Parliament against legislation by Ordinance.
[82] Impeachment of Richard Lyons.
[84] Persons appointed to supervise expenditures.
[85] Account of expenditures required by Parliament.
[86] The King orders accounts to be submitted to Parliament.
[95] Statute of Provisors.
[100] Delegation of Powers by Parliament of Shrewsbury.
[102] Resignation of Richard II.
[103] Deposition of Richard II.
[105] Haxey's case.
[111] Manner of electing Knights of the Shire.
[112] Commons to originate money-bills.
[115] Residence required of Knights of the Shire and of their electors.
[117] King agrees not to alter the petitions of the Commons.
[121] Electors of the Knights of the Shires must be 40 sh. freeholders.
[122] Larke's case.

Adams and Stephens—*contd.*

[127] Clark's case.
[136] Establishment of the Court of the Star Chamber.
[137] Allegiance to a *de facto* king no treason.
[142] Strode's case.
[145] Act in restraint of appeals.
[146] Ecclesiastical Appointments Act.
[148] 1534. Act of Supremacy.
[152] The Lex Regia.
[156] Ferrer's Case.
[167 and 168] The Act of Supremacy. The Act of Uniformity.
[172] Establishment of the Court of High Commission.
[175] 1571. Oath of a Privy Councillor.
[177] The Commission of a Justice of the Peace.
[179] Resolutions in Norfolk Election case.
[183] Act in Shirley's case.
[184] Bates' case.
[185] The case of Prohibitions.
[186] Calvins' case.
[187] The case of Proclamations.
[189] The Petition of Right.
[190] Remonstrance against Tonnage and Poundage.
[194] The answer of the judges in the ship-money case.
[198] Act against dissolving the Long Parliament without its own consent.
[199] Act for the abolition of the Court of Star Chamber.
[204] The Grand Remonstrance.
[206] The Clerical Disabilities Act.
[212] The Death Warrant of Charles I.
[219] The Instrument of Government.
[221] Declaration of Breda.
[227] Declaration of Indulgence.

Skinner *vs.* East India Company—(Robertson—Select Statutes and Documents).

[228] Test Act.

Shirley *vs.* Fagg—(Robertson—Select Statutes and Documents).

[229] Danby's Impeachment.
[231] Habeas Corpus Act.

Adams and Stephens—*contd.*

[233] Hale's case.

Seven Bishops' case—(Robertson—Select Statutes and Documents).

[236] The Civil List.

[237] The Mutiny Act.

[238] The Toleration Act.

[239] The Bill of Rights.

[241] The Triennial Act.

Ashby *vs.* White (Robertson—Select Statutes and Documents).

[243] The Act of Settlement.

[244] Act of Union with Scotland.

[245] The Place Act.

[247] The Septennial Act.

[248] The Peerage Bill.

[251] Camden's decision against general warrants.

[252] Mansfield's decision against general warrants.

[253] Somersett's case.

[254] Dunning's Resolution.

[256] Fox's Libel Act.

The case of Wolfe Tone (Robertson).

[258] Act of Union with Ireland.

[259] Abolition of the Negro slave trade.

[261] Repeal of Corporation and Test Acts.

[262] Catholic Emancipation Act.

Stockdale *vs.* Hansard (Robertson—Select Statutes and Documents).

[263] Reforms Act of 1832.

[265] Affirmation allowed instead of oath.

[266] Jewish Relief Act.

[267] Reform Act of 1867.

[269] Education Act.

[270] Ballot Act.

[271] Supreme Court of Judicature Act.

[272] Appellate Jurisdiction Act.

[275] Reform Act of 1884.

[276] Third Redistribution of Parliamentary seats.

Parliament Act of 1911.
Constitution of the Irish Free State, 1922.
Statute of Westminster, 1931.
(Robertson—Select Statutes and Documents).

ECONOMICS.

(Common to Branches III, V and XIII.)

Students will be required to show a clear understanding of economic principles by intelligent application of economic theory to Indian facts and problems.

General.—The scope of economics. Relation of Economics to other Sciences. Methods of Economic enquiry, deductive and inductive, (*e.g.*, family budgets, village and city surveys, statistics).

Psychological Basis of Economics and Consumption.—Classification of Wants. Satiability, wants in relation to activities. Elastic and Inelastic Demand. Economic meaning and types of consumption. Conception of 'Utility' and 'Value'. Economic motives; the 'Economic Man'; influence of the Family System.

The Production of Wealth.—Definition. Production as *(a)* creation of use value, *(b)* creation of exchange value. Classification. Production for producer's use *(a)* Individual, *(b)* Social. Production for the Market.

Factors of Production.—Natural forces and materials, soil, sun, rain, minerals, etc. The principle of Conservation. *Material Capital* (Classification of forms), social and individual capital. *Human energies,* *(a)* physical, *(b)* intellectual. Theory of population. Efficiency dependent on *(a)* individual physique, nutrition, knowledge, skill, moral quality; *(b)* social conditions, *e.g.,* social order, co-operation and division of labour, methods of conserving past acquisitions of skill and knowledge (*e.g.*, hereditary occupations, apprenticeship, industrial education). New acquisitions (*e.g.,* research and invention).

Characteristics of Modern Production.—Basis *(a)* Individual Property. *(b)* Contract. Character *(a)* Mercantile, *(b)* Capitalistic *Forms* *(a)* Individual (Peasant and craftsman), *(b)* Capitalistic (individual employer and joint-stock company), *(c)* Co-operative, *(d)* Collectivist (state and municipal) *Specialisation. Concentration* in agriculture, manufacture, transport, commerce. Horizontal and vertical combinations. *Competition* and *Monopoly.* Extent to which Indian industry possesses these characteristics.

Stages of Production.—Extractive Industries. Agriculture. Fishing, Forestry, Mining, etc. *Manufacture,* Laws of Diminishing Returns and Increasing Returns. *Transport* and *Commerce,* local, intranational and international. *Money, credit,* and *insurance* as auxiliaries to production.

Mechanism of Exchange.—Origin and functions of money. Metallic coinage. Monometallism and Bimetallism. Functions of Banks. Fiduciary money and money substitutes. (Treasury notes, bank notes, cheques, bills of exchange). Settlement of accounts, intranational and international. The Rupee. Indian Exchange. Indian Banking organizations.

Exchange Value.—Theory of Value. Equilibrium between Demand and Supply. Market value and normal value. Values in international trade. Crises. Overproduction. 'Value of Money,' meanings of phrase; Quantity Theory; Cost and Marginal Utility Theory. Variations in Value of Money.

Distribution of Wealth.—The Share of Land: Rent. Supply and Demand in relation to Land. The Ricardian Law of Rent. Economic Rent. Customary Rent. Rack-rent. The sharing of economic rent in India.

The Share of Labour: (a) Wages.—Supply and Demand in relation to Labour. Theories of Wages *(a)* Minimum subsistence, *(b)* Standard of Life, *(c)* Marginal productivity. Combinations of employers and employees in relation to wages.

(b) Salaries.—Supply and Demand in relation to acquired knowledge and skill, and exceptional ability.

The Share of Capital: Interest.—Supply and Demand in relation to Capital. The accumulation of capital. Conversion of capital from unspecialized forms. Interest on loanable capital. Interest on investments. Capitalization. Promotion.

The Share of Enterprise: Profits.—Supply and Demand in relation to business organization. Profits and the Enterpreneurs. Quasi Rent of net industrial advantage.

The Share of the State: Taxation.—The Community as worker and sharer in the product.

Rent, wages, etc., regarded *as cost of production.* How far these enter into price.

Economic Functions of the State—

Duties and expenses of Government, Local and Imperial, Local and Imperial Taxation. Methods of raising taxes. The Indian Budget. Loans. The Indian Debt.

Theories of Taxation. Taxation according to benefit, taxation according to ability. Taxation for revenue only. Incidence of Taxation.

Taxation and International Trade. Free Trade. Retaliation. Imperial Preference. Protection of native industries, Tariffs as part of a policy of national defence or aggrandisement. Commercial treaties.

The State and the Regulation of Industry. Factory Acts and the protection of the worker. Rural indebtedness and its remedies. Migration and emigration. State assistance of Industry.

Public ownership and control. State Socialism.

Special Subjects.

Any two of the following subjects :—

I. Politics—

(i) Political Writing of Burke.

(ii) Federalism, Ancient and Modern.

II. History—

Unification of Germany.

III. Indian History—

(i) The Mauryan Empire.

(ii) The Gupta Empire.

(iii) The Vijayanagar Empire.

(iv) Moghul India (1605—1707).

(v) Indian Administration since 1600.

IV. Economics—

(i) Currency and Banking.

(ii) Public Finance.

Text-Books for Study and Reference :—

I. Politics—

i. Political Writings of Burke.

Burke, Select Works (with introduction), by E. J. Payne, Oxford University Press, Vols. 1 and 2.

The Works of Burke. (World's Classics) Oxford University Press.

Vol. 2. Speeches at his arrival at Bristol and at the conclusion of the Poll, 1774.

Speech on presenting to the House of Commons (on Feb. 11, 1780) a plan for the better security of the Independence of Parliament, and the Economical Reformation of the Civil and other establishments.

Vol. 3. Speech at Bristol previous to the elections in that city, 1780.

Speech at Bristol declining the Poll, 1780.

Speech on Fox's East India Bill, Dec. 1, 1783.

Speech on the motion made in the House of Commons, February 7, 1771, relative to the Middlesex election.

Speech on a Bill for shortening the duration of Parliaments.

Speech on a motion made in the House of Commons, May 7th, 1782, for a Committee to enquire into the state of the representation of the Commons in Parliament.

Vol. 5. An Appeal from the new to the old Whigs.
Address to the King.

Address to the British Colonists in North America.

Letters of Edmund Burke: edited by H. J. Laski (World's Classics). Oxford University Press.

The Political Philosophy of Burke by J. Maccunn.

Lord Morley: Burke.

ii. Federalism, Ancient and Modern.

The scope of study of "Federalism, Ancient and Modern" is indicated by the following books:—

1. Bryce: The American Commonwealth.
2. Bryce: Modern Democracies.
3. Brunet: German Constitution.
4. Brogan: Government of the United States.
5. De Tocqueville: Democracy in America.
6. Calhoun: Government of the U.S.A.
7. Dicey: Law of the Constitution.
8. Nicholas Murray Butler: United States of America.
9. Garner: American Political Ideas and Institutions.
10. Hall: British Commonwealth of Nations.
11. Hamilton, etc: The Federalist.
12. Holst: Constitutional History of the U.S.A.
13. Kennedy: The Constitution of Canada.
14. Moor: The Constitution of the Commonwealth of Australia.
15. Munro: Governments of Europe.
16. Newton: Federal and Unified Constitutions.
17. Warren: The Supreme Court in U.S.A.
18. Wilson: Congressional Government.
19. Dealey: Our State Constitutions.
20. Hart: Actual Government in the U.S.A.
21. Bonjour: Real Democracy in operation.

22. Adams and Cunningham : The Swiss Confederation.
23. Egerton : Federations and Unions in the British Empire.
24. Freeman : History of Federal Government in Greece and Italy.
25. Brooks : Government and Politics of Switzerland.
26. Kerr : Law of the Australian Constitution (Sydney 1925).
27. Lefroy : Canada's Federal System (Toronto 1913.)
28. Vincent : Government of Switzerland.
29. Mattern : Principles of the Constitutional Jurisprudence of the German Republic.
30. Oppenheimer : The Constitution of the German Republic.
31. Willoughby : The American Constitutional System.
32. Borden : The Canadian Constitution.
33. Beard : The Supreme Court and the Constitution.
34. Keith : Dominion Autonomy in Practice.

II. History—

Unification of Germany.

Books for Study :—

(1) The Cambridge Modern History—

Vol. X : Chap. xi : The German Federation 1815-40.
Chap. xii : Literature in Germany.

Vol. XI : Chap. iii : Liberalism and Nationality in Germany and Austria.
Chaps. vi, vii : Revolution and Reaction in Germany (1848-52)
Chap. xv : Austria, Prussia and the Germanic Confederation.
Chap. xvi : Bismarck and German Unity.
Chap. xxi : The Franco-German War.

(2) A. W. Ward : Germany (The Cambridge Historical Series). Vols. I and II, 1815-1871.

(3) Lipson : Europe in the Nineteenth Century.

(4) Marriott and Robertson : The Evolution of Prussia, the Making of an Empire (1915).

(5) Headlam : Bismarck and the Foundation of the German Empire (Heroes of the Nations).

(6) Hearnshaw : Main Currents of European History (1815-1915)

Books for further study and reference :—

(1) G. A. Fyffe : The History of Modern Europe.

(2) Seeley : Life and Times of Stein or, Germany and Prussia in the Napoleonic Age, 3 vols.

(3) Malleson : The Life of Prince Metternich (1888).

(4) Karl Marx : Revolution and counter-Revolution in Germany edited by E. Marx Aveling (1896).

(5) Acton: The Causes of the Franco-Prussian War—in his 'Historical Essays and Studies' (1907).

(6) Bismarck, the Man and the Statesman—An Autobiography.

(7) Buch : Bismarck : Some Secret Pages of his history.

(8) Schwill : The Making of Modern Germany.

(9) Treitschke : History of Modern Germany. Translation by E. & C. Paul in 6 Vols. Vols. I to IV.

(10) H. Von Sybel—Germany under Wilhelm I.

Vols. I to III—Eng. Trans. by L. M. Perin & G. Braford, New York (1890).

(11) J. Ward : Experience of a Diplomat, being Recollections of Germany founded on Diaries kept during the years 1840 to 1870 (London 1872).

(12) Maurice : The Revolutionary Movement of 1814—49 in Italy, Austria-Hungary and Germany (London, 1887).

(13) G. P. Gooch : History and Historians in the 19th Century (1913) (specially useful on the German Historical School).

III. Indian History.

i. The Mauryan Empire.

(Books will be prescribed later).

ii. The Gupta Empire.

Books for Study :—

(1) F. E. Pargiter : Dynasties of the Kali Age.

(2) Fleet : Gupta Inscriptions (Corpus Inscriptionum Indicarum III).

(3) Allan : Catalogue of Coins in the British Museum : Gupta Coinage.

(4) Rapson : Catalogue of Coins in the British Museum, Andhra, etc.

(5) Sir John Marshall : Guide to Sanchi.

(6) Vincent Smith : History of Fine Arts in India (relevant chapters only).

(7) S. K. Ayyangar : Vakatakas and their place in Indian History.

(8) Smith's Vakatakas : J. R. A. S. 1914.

(9) Jouveau-Dubreuil : A History of the Deccan.

(10) Legge: Fa Hien.

(11) Bhandarkar: Peep into the Early History of India.

(12) H.C. Ray Chaudri: Political History of Ancient India, Parikshit to the Gupta Empire.

(13) S. K. Ayyangar: Samudragupta and Chandragupta II.

(14) Hun Invasions: J. R. A. S. 1908, Hoernle's article on Yasodharman.
J. B. Br. R. A. S. XIX and XXIV Modi and Pataka.

(15) S. K. Ayyangar: Origin and Early History of the Pallavas or
R. Gopalan's History of the Pallavas of Kanchi (earlier part).

For further reading—

(1) A. S. R. 1903—4 Basarh Seals.

(2) Bhitari Seal of Kumaragupta; J. A. S. B. LVIII.

(3) Inscriptions of Kumaragupta I. J. A. S. B. V. New Series.

(4) Two Vakataka Grants: J. A. S. B. XX New Series. Ep. Ind. XV.

(5) Damodrapur Plates: Ep. Ind. XV.

(6) Samudragupta: Ind. Antiq. 1913.

(7) V. A. Smith: Gupta Chronology, Indian Antiquary. 1902.

(8) Western Satraps: J. R. A. S. 1890 and 1899 Bindulph.

(9) Kay's Indian Mathematics.

iii. The Vijayanagar Empire—

R. Sewell: A Forgotten Empire (Reprint, 1924).

S. Krishnaswami Ayyangar: South India and her Muhammadan Invaders.

Major King Buchan-i-Ma'asir (Reprinted from the Indian Antiquary—Vol. 28).

S. Krishnaswami Ayyangar: Sources of Vijayanagar History. Abdur Razzak: An account of his voyage to India (Chapter on Vijayanagar).

R. H. Major: India in the 15th Century (Trans.) (Hakluyt Society). Failing this, Extract in Elliot and Dawson's History of India as told by her own Historians.

S. Krishnaswami Ayyangar: A little known Chapter of Vijayanagar History.

H. Krishna Sastri: Three articles on the Dynasties of Vijayanagar—A. S. R. 1907,-08, 1908-09 and 1911-12.

Longhurst: Humpi Ruins.

Briggs: Ferishta.

M. Longworth Dames: Book of Duarte Barbosa—chapters relating to Vijayanagar.

Hultzsch: Coins of Vijayanagar (in the Indian Antiquary).

• S. Krishnaswami Ayyangar and R. Satyanatha Ayyar: The Nayaks of Madura—Introduction and early chapters up to Chokkalinga Nayaka.

Saletore: Social and Political Life under Vijayanagara Empire.

For Consultation.—

Epigraphist's reports of Madras and Mysore.

or

Rangachari's Inscription of the Madras Presidency.

Danvers—Portuguese India.

Purchas: His Pilgrims, Volume X.

iv. Mughal India, 1605 to 1707—

M. Elphinston: History of India, Ed. E. B. Cowell.

H. G. Keene: History of Hindustan.

Pringle Kennedy: History of the Great Mughals, 2 Vols.

Lane Poole: Aurangzeb (Rulers of India Series).

Jadunath Sarcar: History of Aurangazeb (5 Vols. so far published).

Sir Willim Hunter: History of British India. 2 Vols.

Duff: History of the Mahrattas, Vol 1 (3 Vols. Cambray & Co., Calcutta, or better Edwardes' edition, Oxford University Press).

Ranade: Rise of the Mahratta Power.

W. Irvine: Life of Aurangazeb (Indian Antiquary re-print).

Memoirs of Jehangir: Trans. by Rogers and Beveridge, 2 Vols. Royal Asiatic Society's Publication.

Sir Henry Elliot: History of India, as told by her own Historians, Vols. VI and VII.

For Consultation only:—

Sir Thomas Roe (Ed. by W. Foster, 2 Vols.)

Manucci: Storia do Mogor (Trans. by Irvine, 4 Vols.)

Bernier: Travels in the Mughal Empire (Vincent Smith's edition, Oxford University Press).

Tavernier: Travels in India (Ball's edition, revised by W. Crookes, 2 Vols. Oxford University Press).

David Macpherson: History of European Commerce with India.

W. Foster's Letters received by the East India Company from its Servants in the East.

J. Talboys Wheeler : Madras in Olden Times.

Jadunath Sarcar : The India of Aurangzeb.

J. A. Billimoria : Letters of Aurangzeb.

Gemelli Careri's Travels (Hakluyt Society).

Ma'asir-ul-Umara : English translation in the Bibliotheca Indica.

v. Indian Administration since 1600 :—

Books recommended.

List of Documents for the Special Subject :
Indian Administration since 1600.

(1) A factory of the East India Company in the days before the conquest (Fryer) 1696—Muir : The Making of British India, pp. 22-5.

(2) The difficulties of a honest governor (Vansittart's Narration) (*ibid* p. 69).

(3) Warren Hastings to Vansittart (1762) on the abuses of private trading (*ibid*, page 69).

(4) Warren Hastings to Vansittart (1762)—Suggested remedies (*ibid*, pages 71-72).

(5) Letter from the Directors to Lord Clive, 1765—condemning their servants (*ibid*, pages 75-76).

(6) Clive's view of the abuses (*ibid*, page 76).

(7) Clive's views on British Policy in 1765 (*ibid*, pages 82-4).

(8) Grant of the Diwani (*ibid*, pages 84-5).

(9) Treaty with Oudh (*ibid*, pages 85-7).

(10) East India Company Act, 1767 (*ibid*, page 87).

(11) All Documents in Keith's speeches on Indian Policy, Vols. I and II, except Documents 1, 2, 3, 4 and 12 in Vol. I.

(12) The Government of India Act, 1935.

Kaye : The Administration of the East India Company.

Ilbert : Government of India.

Ramsay Muir : The Making of India.

Mukerji : Indian Constitutional Documents, 2 Vols.

Cowell : History and Constitution of the Courts and Legislative Authorities in India.

Curtis : Dyarchy.

Ilbert : The New Constitution of India.

Keith : Speeches on Indian Policy.

Archbold : The Indian Constitution.

Ruthnaswami, M.: Some influences that made the British Administrative System in India.

IV. ECONOMICS—

i. CURRENCY AND BANKING—

Books recommended—The same as for Br. IV (Hons.).

ii. PUBLIC FINANCE—

Books recommended—The same as for Br. IV (Hons.).

POLITICS.

(COMMON TO BRANCHES III, IV AND XIII).

The course shall comprise (*a*) a study of the development of political thought from Plato and Aristotle to the present day and (*b*) a study of the constitutions of the important states at the present day. The following books are recommended :—

A.—Political Theory.

Dunning: A History of Political Theories, Vols. I to IV.
Gettell: A History of Political Thought.
Joad: Modern Political Theory.
Laski: A Grammar of Politics.
McIver: The Modern State.
M. Ruthnaswami: The Making of the State.
Ivor Brown: English Political Theory.
Burns: Political Ideals.
Hearnshaw: Social and political ideas of some great mediaeval thinkers.
Ward: Sovereignty.
McIlwain: Mediaeval Political Thought in the West.
Goad and Curry: The Corporative State.
Sabine: A History of Political Theory.
E. Asirvatham: Polltical Theory (2nd Edition), Upper India Publishing House, Lucknow.

B.—Comparative Politics.

Jenks: The State and the Nation.
Sidgwick: The Development of European Polity.
Bryce: Modern Democracies, Vols. I and II.
Munro: Governments of Europe.
Munro: The Government of U. S. A.

Ramsay Muir : How Britain is Governed.

Headlam Morley : The New Democratic Constitutions of Europe.

Newton : Federal and Unified Constitutions.

Strong, C. F. : Modern Political Constitutions.

Dicey : Law of the Constitution.

Keith : Democratic Governments of the British Empire.

Marriot : Second Chambers (Revised edition).

Roberts : Functions of an English Second Chamber.

A. B. Keith : A Constitutional History of India.

Eddy and Lawton : The New Indian Constitution.

Panikkar : Indian States and the British Crown.

Bannerjee : The Indian Constitution.

Sir C. Petrie : A History of Government.

Hattersley : A Short History of Democracy.

Battaglia : Dictatorship on Trial.

Government of India Act, 1935.

The Annual Register (after 1930).

B. Shiva Rao : Select constitutions of the world compiled for the Dail Eireann.

Buell : New Governments in Europe.

F. A. Ogg : European Governments and Politics.

Branch IV—Economics.

1. ECONOMICS 1—(*Principles*)

Robbins, L. : Nature and Significance of Economic Science.

Marshall, A. : Principles of Economics.

Taussig, F. W. : Principles of Economics.

Robertson, D. H. : The Control of Industry (Cambridge Economic Handbooks).

Cannan, E. : A Review of Economic Theory.

Chamberlain, E. : Theory of Monopolistic Competition.

Benham, F. : Economics (Pitman).

For Reference :—

Meade, J. E. : An Introduction to Economic Analysis and Policy.

Knight, F. H. : Risk, Uncertainty and Profit.

Hicks, J. R. : The Theory of Wages.

Carver, T. N. : The Distribution of Wealth.

Pigou, A. C.: The Economics of Welfare.

Marshall, A.: Industry and Trade.

Clark, J. B.: Essentials of Economic Theory.

Robinson, E. A. G.: Structure of Competitive Industry.

2. ECONOMICS II—(*Currency, Banking and International Trade*).

Cannan, E.: Money.

Robertson, D. H.: Money (Cambridge Economic Handbooks).

Fisher, I.: The Purchasing Power of Money.

Keynes, J. M.: A Tract of Monetary Reform.

Layton and Crowther: An Introduction to the Study of Prices, Revd. Edn.

Coyajee, J. C.: The Indian Currency System.

Willis, H. P.: The Theory and Practice of Central Banking.

Whale, R.: International Trade (Home University Library of Modern Knowledge).

Taussig, F. W.: International Trade.

Macfie, A. L.: Theories of the Trade Cycle.

The Indian Central Banking Enquiry Committee Report.

Report of the Macmillan Committee.

Geoffrey Crowther: An Outline of Money (Nelson).

Sayers: Modern Banking.

For Reference:—

Keynes, J. M.: The General Theory of Employment, Interest and Money.

Hawtrey, R. G.: Currency and Credit.

Puxley, H. L.: A Critique of the Gold Standard.

Kemmerer, E. W.: Money: The Principles of Money and their Exemplification in Monetary History.

Haberler, G. von.: The Theory of International Trade.

Walter, H. C.: Modern Foreign Exchange.

Reports of the Indian Currency Committees and Commissions.

4. PUBLIC FINANCE—(*Including Public Utilities*).

Dalton, H.: Public Finance.

Pigou, A. C.: A Study of Public Finance.

Stamp, J.: The Fundamental Principles of Taxation, New and Revd. Edn.

Adams, H. C.: The Science of Finance.

Glaeser, M. G.: Outlines of Public Utility Economics.

Higgs, H.: Financial System of the United Kingdom.

Silverman, H. A.: Taxation: Its Incidence and Effects.

Indian Taxation Committee Report.

Layton's *Memorandum* (Simon Commission Report, Vol. II).

Thomas, P. J.: Growth of Federal Finance in India (O.U.P.)

For Reference:—

Shirras, G. F.: The Science of Public Finance, 2 vols.

Lutz, H. L.: Public Finance.

Seligman, E. R. A.: Essays in Taxation.

Report of the Colwyn Committee on National Debt and Taxation, 1927.

Jagtiani, H. M.: The Role of the State in the Provision of Railways.

Ambedkar, B. R.: The Evolution of Provincial Finance in British India.

Mir Khan, M.: Federal Finance.

Acworth, W. M.: Report on the Administration and Working of Indian Railways, Vol. I (1921).

Stourm, R.: The Budget (American Edition).

Adarkar, B. P.: The Principles and Problems of Federal Finance.

Hick: The Finance of British Government.

4. ECONOMIC HISTORY—(*Great Britain, India, France, Germany and U.S.A.*)

Cunningham, W.: Growth of English Industry and Commerce in Modern Times, Vol. III.

Meredith, H. O.: Economic History of England, 1937 Edn.

Knowles, L. C. A.: The Industrial and Commercial Revolutions in Great Britain during the 19th Century.

Knowles, L. C. A.: Economic Development of the Overseas Empire, 2 Vols.

Rees, J. F.: A Short Fiscal and Financial History of England, 1815-1918.

Clapham, J. H.: The Economic Development of France and Germany, 1815-1914.

Ogg and Sharp: Economic Development of Modern Europe.

Birnie, A.: An Economic History of Europe.

Bogart, E. L.: Economic History of the U. S.

Gadgil, D. R.: The Industrial Evolution of India in Recent Times.

Anstey, V.: Economic Development of India, Revd. Edn.

Buchanan, D.H.: The Development of Capitalist Enterprise in India.

Parimal Ray: India's Foreign Trade since 1870.

For Reference :—

Cambridge History of India, Vol. VI.

Knight, Barnes and Flugel: Economic History of Europe.

Imperial Gazetteer of India, Vols. III and IV.

Dutt, R.: Economic History of India, 2 Vols.

Srinivasa Raghava Ayyangar, S.: Memorandum on the Progress of the Madras Presidency during the last 40 years of British Administration.

Slater, G.: The Making of Modern England.

SPECIAL SUBJECT.—*Rural Economics.*

Carver, T. N.: Principles of Rural Economics.

O'Brien, G.: Agricultural Economics.

Venn, J. A.: Foundations of Agricultural Economics, Revd. Edn.

World Agriculture: An International Survey. (A Report by a Study Group of Members of the Royal Institute of International Affairs).

Belshaw, H.: The Provision of Credit with Special Reference to Agriculture.

Clark and Weld: Marketing of Agricultural Products in the U.S.

Fay, C. R.: Co-operation at Home and Abroad. (Revised Edn.). 2 Vols.

Hough, E. M.: The Co-operative Movement in India.

Darling, M. L.: The Punjab Peasant in Prosperity and Debt.

Report of the Royal Commission on Agriculture in India.

Howard, L. E.: Labour in Agriculture—An international Survey. Royal Institute of International Affairs.

Slater, G.: Some South Indian Villages.

Howard and Howard: Indian Agriculture (India of To-day Series).

Kaji, H. L.: Co-operation in India.

Nicholson's Report on Land and Agricultural Banks in the Madras Presidency.

Maclagan Committee's Report on Co-operation in India.

Madras Banking Enquiry Committee Report.

Indian Central Banking Committee Report (Chapters on Rural Finance).

Some South Indian Villages—A resurvey—Edited by Dr. P. J. Thomas and Mr. K. C. Ramakrishnan.

Cohen, R: Agricultural Economics (Cambridge Economic Handbooks Series).

SPECIAL SUBJECT—*Industrial and Labour Problems.*

Silverman, H. A.: The Economics of Social Problems.
Robinson, E. A. G.: The Structure of Competetive Industry.
Haney, L. H.: Business Organisation and Combination.
Shields, B. F.: The Evolution of Industrial Organisation.
Lokanathan, P. S.: Industrial Organisation in India.
O'Brien, G.: Labour Organization.
Jones, E. D.: The Administration of Industrial Enterprises.
Tillyard, F.: The Worker and the State, Revd. Edn. 1936.
Clow. A. G.: State and Industry.
Clow, A. G.: Indian Factory Legislation.
Webb, S. & B.: Industrial Democracy.
Webb, S. & B.: History of Trade Unionism.
Cole, G. D. H.: A Short History of the British Working Class Movement, 3 Vols.
Richardson, J. H.: The Minimum Wage.
Slater, G.: Poverty and the State.
Watkins, G. S.: An Introduction to the Study of Labour Problems.
Beveridge, W. H.: Unemployment: A Problem of Industry.
The Royal Commission on Labour in India: Report and Evidence.
Cohen, P.: The British System of Social Insurance.
Survey of Industrial Relations (Balfour Committee on Trade and Industry).
Hobson, J. A.: Economics of Unemployment.
Gupta, R. B: Labour and Housing in India.

SPECIAL SUBJECT—*History of Economic Thought.*

Gray. A.: The Development of Economic Doctrine.
Gide and Rist: A History of Economic Doctrines from the time of the Physiocrates to the present day.
Ingram, J. K.: A History of Political Economy.
Cannan, E.: A Review of Economic Theory.
Cannan, E.: A History of the Theories of Production and Distribution in English Political Economy, 1776-1848.
Price, L. L.: A Short History of Political Economy in England from Adam Smith to Arnold Toynbee.
Fay, C. R.: Great Britain from Adam Smith to the present day.
Homan, P. T.: Contemporary Economic Thought.
Bullock, C. J.: Selected Readings in Economics.

Classics.

1949 to 1951.

Adam Smith: Wealth of Nations.
Mill, J. S.: Political Economy.

Special Subject—Statistics.

SYLLABUS AND TEXT-BOOKS.

Statistical Methods.—

Collection of data—census method and sample method.

Classification and tabulation of data.

Diagrammatic representation—charts, bar diagrams (simple and subdivided), Spot diagram, graphs of time series (simple and logarithmic)—frequency distribution—frequency polygon, Histogram, frequency curve and Ogive.

Measures of central tendency.—

Mid point, Arithmetic mean, median, mode, geometric mean and harmonic mean.

Measures of Dispersion.—

Range, standard deviation, mean deviation, quartile deviation, co-efficient of variation, skewness.

Two variables.—

Tests of independence and association of variables—co-efficient of contingency—co-efficient of correlation (by the product moment and Rank methods)—regression lines, partial and multiple correlation for 3 Variables. Non-linear regression and correlation ratio.

Method of least squares for fitting polynomials.

Sampling.—

Probable errors of (1) the proportion, (2) Arithmetic mean, (3) Standard deviation, and (4) co-efficient of correlation in large samples. Modifications for small samples. Testing the significance of the difference between the values of the above statistics in two different samples.

Text-books.—

Gavett : A First Course in Statistical Method.

Dubey & Agrawal : Elementary Statistics.

Bowley : Elements of Statistics.

For Reference.—

Jones : First Course in Statistics.

Economic Statistics.—

Index numbers, application to statistics of production, prices, trade, wages, cost of living, etc. Income and capital.

Analysis of time series—general trend, seasonal fluctuations, cyclical fluctuations—application to monetary statistics, trade, etc. Economic surveys—crop forecasts.

Text-books.—

Conor: Statistics in Theory and Practice.
A scheme for an economic census of India: Report by Bowley and Robertson.

For reference.—

F. C. Mills: Statistical methods applied to Economics and Business.

Vital Statistics.—

Census, distribution of population by sexes, age, occupation, etc. Birth rate and death rate—standard rates.

Text-book.—

Pearl: Medical Biometry and Statistics.

Branch V—Politics.

1. POLITICAL THEORY:—

Syllabus.

The nature and scope of political science—The State—its characteristics—Nation, Society, Government.

Origins of the State—Different theories—Emergence of the modern State—The ethical basis of the State—its justification—The basis of political obligation—Authority and obedience in the State—The right to resist the State—Sovereignty of the State and pluralism.

The State and the Individual—Theories of Rights—Nature and sources of law—Law as the command of the Sovereign—Law as the expression of the Social Will—Individual liberty—the "Four Freedoms" of Roosevelt—Liberty and Law—Liberty and Equality—Theories of punishment.

The State in relation to man's social and economic life—Association, Family and Education—Theories of private property—Individualism, collectivism, neo-individualism, socialism, and communism—The Corporative State and Corporative Society.

The concept of nationality—Self-determination of nations—imperialism, old and new—internationalism—the League of Nations—World federation and regional federation—World community.

Democracy and its problems—Democracy as a form of Government—an order of society, as an industrial condition, and as a moral and spiritual principle—The nature of public opinion.

The new concept of State—Dictatorship and authoritarianism—Fascism and Communism.

The State and community—Social harmony and social justice—Citizenship—its rights and duties.

Books recommended for study :—

F. G. Wilson—Elements of Politics.

J. A. Leighton—Social Philosophies in Conflict.

M. Dakeshott—The Social and Political Doctrines of Contemporary Europe.

E. Asirvatham—Political Theory (3rd edition).

Books recommended :—

Willoughby : Ethical Basis of Political Authority.

McIver : The Modern State.

Lord : The Principles of Politics.

Sidgwick : Elements of Politics—Part I.

Laski : A Grammar of Politics.

Beni Prasad : The State in Ancient India.

Laski : The State in Theory and Practice.

Joad : Modern Political Theory.

Asirvatham : Political Theory (1943).

Coker : Recent Political Thought.

*2. HISTORY OF POLITICAL THOUGHT :—

Classic.—

1949.

The Prince of Machiavelli—Nelson's World's Classics.

1950 and 1951.

J. S. Mill's Essay on Liberty.

Other books recommended for study :—

Dunning : Political Theory, Vols. I to IV.

Gettell : History of Political Thought.

McIlwain : The Growth of Mediaeval Political Thought in the West.

Hearnshaw : Some Social and Political Ideas of Some Great Mediaeval Thinkers.

* The paper on "History of Political Thought" will be divided into 2 Parts, Part I containing questions on the Classic prescribed and Part II containing general questions on the History of Political Thought.

Ivor Brown : English Political Theory.

Joad : Modern Political Theory.

Goad & Curry : The Corporative State.

Sidgwick : Development of European Polity. (Chapters on Ancient and Mediaeval Politics).

Sabine : A History of Political Theory.

History of Political Thought—Volumes by Laski, Davidson and Barker in The Home University Library Series.

3. MODERN POLITICAL INSTITUTIONS :—

Munro : Governments of Europe.

Garner : Political Science and Government, Part II.

Hawgood : European Constitutions since 1787.

Ogg : European Government and Politics.

Brogan : The American Political Systems.

Blachley and Oatman : Comparative Governments.

Keith : The Dominions as Sovereign States.

Eddy and Lawton : New Indian Constitution.

G. N. Joshi : The New Constitution of India.

The Governments of Continental Europe, Edited by Gooch, (Macmillans, U.S.A.).

Other books recommended—Same as for Branches III and IV, viz., Section B, Comparative Politics.

4. ECONOMICS—In common with Branch III Honours.

5. HISTORY OF ADMINISTRATIVE AND CONSTITUTIONAL DEVELOPMENT IN INDIA—

Books recommended.—

Cambridge History of India : I chh. 12, 19.

V chh. 10, 11, 18, 23, 25, 26, 27, 31, 32.

VI chh. 1-7, 11-21, 27-33.

S. V. Venkateswara : Indian Culture Through the Ages, Vol. II.

Dikshitar : Mauryan Polity.

R. D. Banerji : The Age of the Imperial Guptas, Chapter II.

K. A. Nilakanta Sastri : Studies in Cola History and Administration (Omitting I and II).

K. A. Nilakanta Sastri : Colas : Chapters IV and XVII—end.

N. Venkataramanayya : Studies in the Third Dynasty of Vijaya nagara, Part II.

Ibn Hassan : Central Structure of the Mughul Empire.

Sarkar : Mughul Administration.

Keith : Constitutional History of India (1600—1935).

Seton : The India Office.

Ilbert : Government of India (Historical Chapters).

Altekar : Village Committees in Administration.

Dr. I. H. Quereshi : Administrative System of the Sultanate of Delhi.

6. OPTIONAL SUBJECTS :—

(a) *Public Administration*—Principles and Practice (with documents).

L. D. White : Introduction to the study of Public Administration.

Willoughby : Principles of Public Administration.

Goodnow : Comparative Administrative Law.

H. Finer : The British Civil Service.

Robson : The Development of Local Government.

P. Ashley : Local and Central Government.

Simon Commission Report : Memorandum submitted to the Government of India by the Madras Government.

Montague-Chelmsford Report.

Report of the Decentralization Committee.

Haldane's Report on the Machinery of Government.

Walker : Public Administration in the U.S.A.

(b) *A period or topic of British Indian Administration* (with Documents).

(1) The Administration of Lord Cornwallis (Books to be prescribed later).

(2) Local Self-Government in India (Books to be prescribed later).

7. ESSAY.—In common with Branches III, IV, V and XIII.

Branch VII.

ENGLISH LANGUAGE AND LITERATURE.

1949, 1950, 1951 and 1952.

DIVISION (A).

Old English :—

A. J. Wyatt: Anglo-Saxon Reader, (Cambridge University Press), Selections 1, 2, 3, 7, 11, 12, 14, 20, 24, 26, 27, 28 and 34 to be studied in detail.

Middle English.—

O. F. Emerson: Middle English Reader (Macmillan).
The following selections :—
Part I-A—1, 2.
B—1, 6, 7.
Part II-A—1, 3, 5, 6.
B—2, 4, 5, 7, 8.
C—3.

Sir Gawayne and the Green Knight (Lines 1893 to 2530).

Chaucer: The Prologue: Troilus and Criseyde (Edited by R. C. Goffin, Oxford University Press).

DIVISION (B).

Shakespeare.—

For detailed study.—

The Two Gentlemen of Verona, Henry IV—Part I, As You Like It, Hamlet, The Tempest.

For general study.—

The Plays and Poems of Sheakespeare.

MODERN LITERATURE, PERIOD I (BEFORE 1660).

Poetry.—

For detailed study.—

The Selections from The Faerie Queene in Renwick's "Spenser" (see below).

For general study.—

Wyatt, Surrey, Daniel, Drayton: Selections in English Verse, Vol. I, edited by W. Peacock, World's Classics).

Ballads: Selections in Peacock, Vol. II pp. 434—556.

Spenser: Selections by W. Renwick, (Clarendon Series, O.U.P).

Milton: Selections in Peacock, Vol. II, pp. 217—279.

Campion, Donne, Herbert, Jonson, Crashaw: Selections in Peacock, Vol. II.

Prose.—

For detailed study.—

Sidney: Apology for Poetry.

Bacon: Essays I—XII.

For general study.—

Mandeville, Malory, Berners, More, Hooker: Selections in English Prose, Vol. I, (Edited by H. Craik, Macmillan).

Bacon: The New Atlantis.

Browne: Religio Medici.

Milton: Areopagitica.

Drama.—

For detailed study.—

Beaumont and Fletcher: Philaster.

Webster: The Duchess of Malfi.

For general study.—

Marlowe: Dr. Faustus; Edward II.

Kyd: The Spanish Tragedy.

Jonson: Every Man in his Humour.
Bartholomew Fair.

Massinger: A new Way to pay old Debts.

Dekker: The Shoe Maker's Holiday.

Webster: The White Devil.

MODERN LITERATURE, PERIOD II (1660—1798).

Poetry.—

For detailed study.—

Milton: Paradise Lost, Books IV and IX.

Dryden: Absalom and Achitophel.

Pope: Epistle to Arbuthnot.

For general study.—

Marvell and Vaughan: Selections in Peacock, Vol. II.

Dryden: MacFlecknoe.

Pope, Johnson, Gray, Collins, Goldsmith, Blake, Burns: Selections in Peacock, Vol III.

Thomson: Winter.

Prose.—

For detailed study.—

Dryden: Preface to the Fables.

Johnson: Preface to Shakespeare.

For general study.—

Bunyan: Pilgrim's Progress. Part I.
Swift: Gulliver's Travels.
The Tale of a Tub.
The Battle of the Books.
Addison and Goldsmith: Selections by Collins and Treble (O.U.P.).
Richardson: Pamela.
Fielding: Tom Jones, Joseph Andrews.
Johnson: Lives of Milton, Dryden and Pope.
Burke: On American Taxation.
On Conciliation with America.
Gibbon: The Age of the Antonines (Edited by Fowler, Macmillan).

Drama.—

For detailed study.—

Congreve: The Way of the World.

For general study.—

Dryden: All for Love.
Steele: The Conscious Lovers.
Goldsmith: She Stoops to Conquer.
Sheridan: The School for Scandal.

MODERN LITERATURE, PERIOD III (AFTER 1798).

Poetry.—

For detailed study.—

Wordsworth: Tintern Abbey.
Ode on the Intimations of Immortality.
Keats: Odes To Autumn, On Melancholy, To a Nightingale, On a Grecian Urn.
Arnold: The Scholar Gipsy, Thyrsis.
Browning: Abt Vogler.

For general study.—

Wordsworth, Coleridge, Keats, Shelley: Selections in Peacock, Vol. IV.
Browning: Rabbi ben Ezra, Andrea del Sarto, Pippa Passes.
Rossetti, Tennyson: Selections in Peacock, Vol. V.
Morris: The Defence of Guinevere and other Poems.

Prose.—

For detailed study.—

Lamb : Essays of Elia, First Series.

Arnold : Essays ed. Rawlinson, (Macmillan)

For general study.—

Scott : The Heart of Midlothian.

Jane Austen : Pride and Prejudice, Emma.

Lamb : Letters.

Hazlitt : The Spirit of the Age.

Arnold : Essays in Criticism I and II series.

Pater : Appreciation.

Stevenson : Weir of Hermiston, Virginibus Puerisque.

Thackeray : Vanity Fair.

Meredith : The Egoist, Essay on Comedy.

Hardy : Tess of the D'urbervilles, Far from the Madding Crowd.

Drama.—

Arnold : Merope.

Swinburne : Atalanta in Calydon.

Shaw : St. Joan.

Drinkwater : Abraham Lincoln.

DIVISION (C).

WORDSWORTH AND HIS CONTEMPORARIES.

Poetry.—

For detailed study.—

Wordsworth : The Prelude, Books I and IV.

Coleridge : Old to Dejection.

Shelley : Prometheus Unbound.

Keats : Endymion, Books I and III.

For general study.—

Wordsworth : The Prelude.

Coleridge : The Ancient Mariner, Christobel.

Scott : Marmion.

Keats : Endymion, The Eve of St. Agnes, Isabella.

Byron : Childe Harold, Cantos III and IV.
Don Juan, Cantos I to IV.

Landor : Selections in English Verse, Vol. V. (edited by W. Peacock, World's Classics).

Prose.—

For detailed study.—

Coleridge and Wordsworth : Biographia and Prefaces, Edited by Quiller-Couch and Sampson, (Cambridge University Press).

Shelley : Defence of Poetry.

For general study.—

Hazlitt : The English Poets, Essays on the Comic Writers.

Lamb : Essays of Elia and Critical Essays (Edited by Ainger).

Landor : Imaginary Conversations, (Indian Edition, Blackie).

De Quincey : Confessions of an Opium Eater.

Cobbett : Selections in Clarendon Series (Ed. by Hughes).

Drama.—

Shelley : The Cenci.

Byron : Manfred.

The Novel.—

Jane Austen : Persuasion, Northanger Abbey.

Scott : Kenilworth, Rob Roy.

Peacock : Misfortunes of Elphin, Crotchet Castle, (World's Classics).

Branch VIII.

SANSKRIT LANGUAGE AND LITERATURE.

1949.

GENERAL PART.

Siddhānta-kaumudi : (*a*) Pūrvārdha, from Strīpratyayaprakaraṇa to the end of Apatyādhikāra in the Taddhitaprakriyā.

(*b*) Uttarārdha, the whole, omitting Uṇādi prakaraṇa.

Vidyānātha : Prātaparudra-yas'o-bhūṣaṇa.

Ṛg Veda : Macdonell's Vēdic Reader, hymns I to X together with Sāyaṇa's Upōdghata to his Ṛg-Bhāṣya and the corresponding passages (I to X) in Sāyaṇa's Commentary on the Ṛg Veda. (Oxford University Press.)

Yāska : Nirukta, Niaghaṇṭuka-kāṇda, Chapter II.

Mṛcchakaṭika by S'ūdraka.

S'ri Harṣa: Naiṣadhīyacarita, Cantos IV, V and VI.

Bāna's Kādambari—from the Acchōdasarōvarṇana to the end of the Pūrvabhāga.

The attention of students is invited to the following books, though it must be distinctly understood that they are not prescribed as text-books.

SCIENCE OF LANGUAGE, HISTORY OF THE SANSKRIT LANGUAGE AND HISTORY OF SANSKRIT LITERATURE.

Books recommended for study.—

Jesperson: Language, its origin, theory and development.

Giles: Short Manual of Comparative Philology for classical students (Macmillan).

Tucker: Introduction to the Natural History of Language (Blackie).

Sweet: The History of Language (Temple Primer).

Bloomfield: Introduction to the Study of Language (G. Bell & Sons).

Macdonell: Vedic Grammar for Students (Oxford University Press).

Whitney: Sanskrit Grammar (Kegan Paul, Trench, Trubner & Co.).

Uhlenbeck: Manual of Sanskrit Phonetics (Luzac & Co.).

Kaegi: The Rig-veda: the oldest Literature of the Indians (Ginn & Co., Boston).

Macdonell: History of Sanskrit Literature (William Heinemann).

Macdonell: India's past.

Max Muller: History of Ancient Sanskrit Literature (Reprint, Panini Office, Allahabad).

A. B. Keith: Classical Sanskrit Literature and Sanskrit Drama, its origin, theory and development.

Books recommended for consultation.—

Brugmann: Comparative Grammar of the Indo-Germanic Languages, translated by Wright, Conway and Rouse.

Bopp: Comparative Grammar of the Sanskrit, Zend, Greek, Latin, Lithuanian, Gothic, German and Slavonic languages (translated by Eastwick).

Schleicher: Compendium, translated by Bendall.

Whitney: Life and Growth of Language.

" : Language and its Study.

" : Oriental and Linguistic Studies.

Max Muller: Lectures on the Science of Language.

" : Biography of Words.

Delbruck: Introduction to the Study of Language.

Carl Abel: Linguistic Essays.

Lefevre: Race and Language.

Gray: Principles of Indo-Iranian Phonology.

Thumb: Handbuch der Sanskrit.

Wackernagel: Altindische Grammatic.

Macdonell: Vedic Grammar.

Beams: Comparative Grammar of the Modern Aryan Languages, of India.

Hoernle: Comparative Grammar of the Gauriyan Languages.

Arnold: Vedic Metre.

Bloomfield: The Atharva-veda.

Ṛk, Yajus and Atharva-prātis'ākhyas.

Goldstucker: Pāṇini, his place in Sanskrit Literature.

Weber: History of Indian Literature translated by Mann and Zachariah.

Muir: Original Sanskrit Texts.

Stein: Kalhaṇa's Chronicle of Kāshmir.

Ragozin: Vedic India.

Rhys Davids: Buddhist India.

V. A. Smith: Early History of India.

Rapson: Ancient India.

R. C. Dutt: History of Civilization in Ancient India.

C. V. Vaidya: Epic India.

" : Riddle of the Rāmāyaṇa.

Bhandarkar: Early History of the Dekkan.

Schrader: Prehistoric Antiquities of the Aryan Peoples.

Langlois and Seignobos: Introduction to the Study of History (translated by Berry).

A. B. Keith: Religion and Philosophy of the Vedas and Upanishads—Harvard Oriental Series.

Winternitz—History of Sanskrit Literature.

P. S. Deshmukh: The Origin and Development of Religion in Vedic Literature. (Oxford University Press, 1933).

SPECIAL PART.

I. MIMAMSA.

Mimamsanyayaprakasa of Apodeva (whole).

Mimamsabhashya of Sabarasvamin, (Chapter I, Pada I.)

II. VEDANTA.

Dharmarajadhvarin: Advaita-paribhasha (whole).

Ramanuja : Vedarthasangraha (whole).

Madhvacharya : Dasaprakaranas omitting Karmanirnaya.

Sankaracharya : Brahma-sutra-bhashya; chatussutri.

III. NYAYA-VAISESHIKA.

Nyayabhashya of Vatsyayana with Nyayasutras of Gautama, Chapters I and II.

Vaiseshikasutras (whole).

Siddhantamuktavali of Visvanathapanchanana (whole).

Nyayakusumanjali of Udayanacharya, Stabakas I and II.

IV. VYAKARANA.

Bhattojidikshita : Praudhamanorama—Samjna, Paribhasha, Sandhi, Stripratyaya and Karakaprakaranas.

Patanjali : Mahabhashya, I. i, Ahnikas i to iii.

Bhartrihari : Vakyapadiya, Kanda I.

V. ALAMKARA.

Anandavardhana : Dhvanyaloka (whole).

Jagannatha Bhatta : Rasagangadhara : First Anana only.

Appayya Dikshita : Kuvalayananda (whole).

VI. SANKHYA-YOGA.

Sankhyakarika of Isvarakrishna with the Vritti of Gaudapada and the Sankhyatattvakaumudi of Vacaspati Misra.

Yogasutras of Patanjali with the Bhashya of Vyasa and the Vritti of Bhoja.

1950.

The same as for 1949 in all the optional subjects in the Special Part. In the General Part, same as for 1949 with the change that Naisadhiyacarita Cantos IV, V and VI be replaced by Naisadhiyacarita Cantos IX, X and XI.

1951.

The same as for 1950.

1952.

The same as for 1951, with the change :

General Part :—

1. Naishadhiyacharita of Sri Harsha, Sargas IX, X and XI be replaced by Sarga I.
2. The following portions be added :
   (a) Aitareya Brahmana, Chapters 37 and 38 (VIII Panchika, ii and iii).
   (b) Kathopanishad, Chapter I (Vallies 1 to 3).

Branch IX.

ARABIC LANGUAGE AND LITERATURE.

1949, 1950, and 1951.

GENERAL PART.

Literature.—

For Study :—

Tafsir-e-Kabir—Imam Razi (First Surah only).
Jamharatu-Ash'a'ril Arab—Ibn Durayd.
Diwan-i-Abi Tammam.
Diwan-i-Ibnul Mu'tazz.
Maqamat of Al Hariri.
Maqamat of Al Hamadani.
Shahihul Bhukhari—First Five Ajza.
Fajrul Islam Part I—Ahmad Amin.
Zuha-Al Islam, Vols. I and II—Ahmad Amin.

Grammar, Prosody and Poetics.—

For Study :—

Asrarul Balaghat—Jurjani.
Al Balagyathul Waziha.
Wright's Arabic Grammar, Vols. I and II.
Wright's Comparative Grammar of Semitic Languages.
Almufassal—Azzamakhshari.

History of Literature.—

Nicholson's Literary History of the Arabs.
Tarikhu-A'dabil-Lughatil Arabiyya—Zaidan.
Fil-Adabil Jahili—Dr. Taha Hussain.

SPECIAL PART.

For Study :—

Kitabut-Taj—Jahiz.
Sirat-u-Ibn Hisham.
Muhazaratu Tarikhil Umamil Islamiah, Vols. I and II—Al Khizari.
'Asrul-mamum—3 Vol.—Ahmad Farid Rifayi.
Tarikh-ut-Tamaddunil Islami—Zaidan.

Books recommended for study with reference to the General Part.—

The Kamil of Al Mubarrad (Edited by Wright).
Khamsatu Davawinil Arab.
Diwans of Abu Nawas and Abul Ala.
Kitab-ul Amali—Abu Ali-al-Qali.
Oriental and Linguistic Studies (Whitney).
Traditions of Islam—Guillaumme.
Muslim Jurisprudence and Theology—Macdonald.
Islamic Culture, edited by Pickthal, first 5 vols.

Books recommended for study with reference to the Special Part.—

Yaqut's Dictionary of Learned Men.
The Spirit of Islam—Amir Ali.
History of the Saracens—Amir Ali.
Rise, Decline and Fall of the Caliphate—Muir.
The Legacy of Islam by Arnold.
Murujuz Zahab—Al Mas'udi.
Ghabir-ul Undulus-wa-Haziruha.
Nabhut Tib-al Maqqarri—(First 2 Vols.).

Branch X.

SYRIAC LANGUAGE AND LITERATURE.

1949, 1950, and 1951.

1. *Comparative Philology and Comparative Grammar—*

    1. Comparative Grammar of Semitic Languages—De Lacy O'Leary—Williams Norgate, Ltd., 36, Great Russell St., London, W. C. 1.
    2. Comparative Grammar of Semitic Languages—Dr. Wright, A. & C. Black, London.
    3. Semitic Comparative Linguistics, edited by Louis H. Gray—Columbia University Press, Morningside Heights, New York.

2. (a) *History of Syriac Language.*

    (b) *History of Syriac Literature*—Dr. Wright, A. & C. Black, London.

3. *Prescribed text-books—General.—*

    1. First Book of Samuel.
    2. Second Book of Samuel.

Supplementary Reading.—

1. The Hebrews: Their History and Government by Prof. McCurdy—John C. Nimmo, 14, King William St., Strand, London.
2. The Social Life of the Hebrews by Edward Day—John C. Nimmo, 14, King William St., Strand, London.

4. *Prescribed text-books—Special I.—*

Book of Treasures by Job of Edessa, Edited by A. Mingana—(W. Heffer & Sons, Ltd., Cambridge).

Supplementary Reading.—

Early History of Syria and Palestine by Lewis Bayles Paton, Ph. D.—John C. Nimmo, 14, King William Street, Strand, London.

5. *Prescribed text-books—Special II.—*

Morceaux Choisis, Vol. I—Abbe Eugene Hanna, Mossoul.

Supplementary Reading.—

History of Christianity by Paulet Raemers—B. Herder Book Co, 33 Queen Square, London, W. C.

6. *Prescribed text-books—Special III.—*

Kthobo d'Haso Phorookoyo (whole)—Mar Julius Press, Pampakuda, Travancore.

7. *Grammar, Prosody and Poetics.—*

1. Kthobo d'Keenotho—Mar Thoma Press, Old Seminary, Kottayam.
2. Noldeke: Compendious Syriac Grammar—Williams Norgate, Ltd., 36, Great Russell St., London, W. C. 1.

Branch XI.

A DRAVIDIAN LANGUAGE OR URDU AND ITS LITERATURE.

1949, 1950 and 1951.

TAMIL.

History of Language and Philology.

For Study :—

Caldwell: A Comparative Grammar of the Dravidian Languages.

Dravidic Studies, Nos. 1—4; Madras University publications, (The Superintendent, Government Press, Madras).

Chatterji, S. K.: The Origin and Development of the Bengali Language, Volume I, Introduction, Sections 1—40, and Appendix B.

Jesperson: Language, Its Origin, Theory and Development.

Gune: Introduction to Comparative Philology.

Vendryes: Language, A Linguistic Introduction to History.

For Consultation:—

Grierson: Linguistic Survey: Vol. IV, Dravidian Languages.

Sweet: The History of Language (Temple Primer).

Bloomfield: Introduction to the Study of Language.

Slater: Dravidian Elements in Indian Culture.

Bagchi, P. C.: Pre-Aryan and Pre-Dravidian in India.

Graff: Language and Languages.

General Phonetics by Armstrong.

Philological Method in the 19th Century by Pederson.

Introduction to Modern Linguistics by Palmers.

History of Literature and Literary Criticism.

Literary Criticism as Applied to Tamil Literature.

SYLLABUS.

1. Fundamentals of Poetics—Fine Arts in their fundamental affinity with one another.

Theory of Art.

Poetics in relation to Aesthetics. Scope of Poetics.

Rhetoric and Figures of Speech and Style.

Meyppattu or Rasa as subjective Reality.

Definition of Poetry and its place in fine arts. Theory of Poetry.

Function of Poetry in human activity.

Didacticism in Poetry.

Poetry and Science.

Poetry and Prose.

Form and content.

Poetic Diction—Metre—Equipment of the Poet—Imagination. Intuition; Sense of Beauty—Culture.

Literature—its definition—Theory of Literature—Study of various kinds of literature. Standard of Literary Tastes.

Theory of Criticism. Literary criticism—Literary merits and blemishes. Various Types of criticism. Criticism as an art and as an impetus to creation.

(The following books are not prescribed as text-books but are recommended for explaining the scope of study.

Familiarity with the principles alone is expected and not a detailed study. Candidates are expected to apply the principles to their study of Tamil Literature).

Richards: Literary Criticism.

Lamborn: Rudiments of Criticism.

Abercrombie: Literary Criticism.

Galey and Scott: An introduction to the methods and materials of Literary Criticism.

Moulton: Modern Study of Literature.

Courthope: Life in Poetry and Law in Taste.

Hudson: Introduction to the Study of Literature.

Saintsbury: History of Criticism (Intermediate Chapters only).

S. K. De: History of Sanskrit Poetics.

2. History of Tamil Criticism—General.

3. Various kinds of Literature in Tamil and History.

Poetry and Prose (Tolkappiam Ceyyul Iyal).

Development of Prose.

Various Prabandams.

Didactic Poetry (Kil Kanakku).

Epic and Puranams.

Akam and Puram—The significance of this classification.

Lyric Poetry—Akam.

Dramatic Poetry.

Development of Drama and Novel and Short Story.

Biography.

Development of Music in relation to Literature (Varippattu, Tevaram, etc).

Satire (Angatam—Poems of Kalamegam).

Elegy (Kaiyaru Nilai).

Learned Poetry and Folksongs (as illustrated by Adanganmurai and Paduthurai respectively of Tattuvarayar).

Religious Poetry.

Patriotic Poetry.

Seetu Kavi.

4. Figures of speech and Meyppattu.

Meyppattiyal, Uvamai Iyal, Enumeration of the figures in the various Nigandu, in Dandi Alankaram, Vira Soliyam (Alankarappatalam).

Ilakkanavilakkam (Ani-Iyal).

Tonnul (Ani-Iyal).

Maran Alankaram.

Visakapperumal Aiyar's Ani Ilakkanam.
Dvani—Kurippupporul—Ullurai Iraicci.
Style and Rhetoric.
Metre and Subject-matter (Seyyul Iyal).
(Knowledge accurate so far as it goes but neither extensive nor minutely detailed is expected).
Chengalvaraya Pillai's Tamil Prose.
Tolkappiyam Seyyul Iyal, Uvamai Iyal, Meyppattu Iyal.
Kavyas—Jagannatha Iyer.
Pattiyals.

TEXT-BOOKS.

***For Study* :—**

K. S. Srinivasa Pillai : Tamil Varalaru—Parts I and II.
Dr. V. Swaminatha Ayyar : Sanga-kalat-tamilum pirkalat-t-tamilum.
G. Duraiswami Pillai : Tamil Ilakkiyam, Sanga-kalam.
V. R. Ramachandra Dikshitar : Studies in Tamil Literature and History.
Lascelles Abercrombie : Literary Criticism.
I. A. Richards : Literary Criticism.
C. T. Winchester : Some Principles of Literary Criticism.

***For consultation* :—**

M. S. Purnalingam Pillai : History of Tamil Literature.
Worsfold : Principles of Criticism.
Hudson : Introduction to the Study of Literature.
Gurrey : The Appreciation of Poetry.
Lamborn : The Rudiments of Criticism.
Moulton : The Modern Study of Literature.

LITERATURE—GENERAL.

Poetry.—

Pattupattu—Porunar Arruppadai.
Purananuru—101—200 stanzas.
Agananuru—1—50 stanzas.
Kalittogai—Palaikkali.
Tirukkural—Chapters 39 to 63.
Kambaramayanam—Sundara Kandam.

Periyapuranam—Eyarkon Kalikkama Nayanar Puranam.

Kalingattupparani—8 to 13 Sections.

Pari Katai—Sections 5 and 6.

Agaligai Venba by V. P. Subramania Mudaliar, Vellagal, Tinnevelly Dt.

Prose.—

Karantaikatturai—Silver Jubilee Commemoration Volume—Essays bearing Nos. 3, 4, 5, 6, 8, 9, 10, 11, 13, 14, 15, 19 and 22 (173 pages on the whole)—Karantai Tamil Sangam, Tanjore.

Pattinappalai Araycci by Maraimalaiadigal, Pallavaram.

Manniyal Siru Ter by Pandithamani M. Kathiresan Chettiyar.

LITERATURE—SPECIAL.

Narrinai.

Chintamani.

Grammar, Prosody and Poetics.

Nannul—Viruttiyurai (Navalar's edition).

Iraiyanar Kalaviyal Urai (Bavanandam Academy edition).

Purapporul Venba Malai (to the end of Padan Padalam).

Tolkappiam—Porul Adikaram; Meyppattiyal—Uvamai Iyal (with the commentary of Perasiriyar).

Yapparungalakkarigai (S. S. W. P. Edition).

Viruttappaviyal by Virabadra Mudaliyar (Edited by E. N. Tanikachala Mudaliyar, 181, Lloyds Road, Mylapore, Madras).

Dandi Alankaram (Porul Ani Iyal with the Old Commentary).

Venbappattiyal.

South Indian History.—

The syllabus as for B.A. Group (v)—Chapters I—XXV.

Inscriptions :—

Selections of Inscriptions prescribed by the University from time to time.

TELUGU.

Poetry (Old).—

1. Bharatamu, Sabhaparvamu, Canto 1.
2. Bharatamu, Virataparvamu, Canto 2.
3. Ranganatharamayanamu, Kishkindha Kandam (Published by the Andhra University).

4. Raghavapandaviyam, Canto 4 by Surana.
5. Amuktamalyada, Canto 6.
6. Pandurangamahatmyamu : Nigamasarmopakhyanamu.
7. Nilasundariparinayamu by Kuchimanchi Timmakavi.

Poetry (Modern).—

1. Panasala by Duvvuri Rami Reddi, Pemmareddipalem, Ellayapalem Post, Nellore District.
2. Jatakakathaguchchamu ; Part II, by Sannidhanam Suryanarayana Sastri, 44, Jeera, Secunderabad (Dn.).

Drama.—

1. Balaramayanamu by Tirupati Venkatakavulu.
2. Kanchanamala by Veluri Chandrasekharam, c/o V. Sadanandam, Masulipatam.
3. Brinda by S. Satchidananda Sastri.

Prose.—

1. Vyasamanjari by Dr. C. R. Reddy (Andhra University Publication).
2. A Critique on Nannechoda's Kumarasambhava (Madras University Publication).
3. Studies in Andhra Bharatam by K. Ramakrishniah, M.A., 28, Singarachari Street, Triplicane, Madras.

Grammar, Prosody and Poetics.—

1. Balavyakaranam.
2. Praudhavyakaranam.
3. Appakaviyam, Canto 3.
4. Kavyalankara Chudamani by Vinnakota Peddana.
5. Dasarupakam—Translated by Suryanarayana Sastri, Agraharam, Dowleshwaram Post, East Godavari Dt.
6. Sahitya Darpanam—Translated by Vedam Venkataraya Sastri, 4, Mallikeswara Temple Lane, Linghi Chetty Street, G. T., Madras.
7. Kavyatma—By E. Raghava Ayyangar, Teacher, Hindu High School, Bezwada.

Special Period.—

Age of Kavitraya (1000 to 1350 A.D.)*

History of Language and Philology.—

For Study:—

(1) Vendryes : Language, a Linguistic Introduction to History.
(2) Caldwell : Comparative Grammar of the Dravidian Languages.

* Candidates are expected to study and acquaint themselves with the literary tendencies and general literature of the period with the help of the books on The History of Telugu Literature available.

(3) Chatterjee, S. K.: Introduction (pages 1—140) in The Origin and Development of the Bengali Language.

(4) Dravidic Studies 1—4 (Madras University Publications).

(5) Studies in Dravidian Philology—By K. Ramakrishnayya (Madras University Publication).

(6) Dravida Bhashalu—By G. J. Somayaji, University College of Arts, Guntur.

For Consultation.—

1. Jesperson : Language, its Origin, Theory and Development.
2. Sweet: The History of Language (Temple Primer Series).
3. Bloomfield: Introduction to the Study of Language.
4. Sesha Ayyangar: Dravidian India, Volume I.
5. Bagchi, P. C.: Pre-Aryan and Pre-Dravidian India.

History of Literature and Literary Criticism.—

For Study.—

1. Veeresalingam: Lives of the Telugu Poets.
2. Andhra Vangmaya Charitra Sangrahamu (Published by Vavilla Ramaswami Sastrulu and Sons, Madras).
3. Andhra Kavitva Charitramu—By Basavaraju Appa Rao (Published by Vavilla Ramaswami Sastrulu and Sons, Madras).
4. History of Telugu Literature by P. Chenchiah and M. Bhujanga Rao (Heritage of India Series), Christian Literature Society Publication.
5. Sahitya Tatva Vimarsanamu—By J. Satyanarayanamurti, No. 3, Luz, Mylapore, Madras.

For Consultation.—

1. Hudson: Introduction to the study of English Literature.
2. Lascelles Abercrombie: Literary Criticism.
3. Worsfold; Principles of Literary Criticism.

South Indian History and Inscriptions.—

South Indian History.—

The syllabus as for B.A. Group (v) Chapters I—XXV of the syllabus.

Inscriptions.—

Selections of Inscriptions prescribed by the University from time to time.

KANNADA.

A. History of Language and Philology.—

For Study.—

1. History of Kannada Language (Readership Lectures by R. Narasimhacharya, Mysore University Publication).
2. Comparative Grammar of the Dravidian Languages by Dr. Caldwell.
3. The History of Language, by H. Sweet (The Temple Primer Series).
4. Vendryes: Language, a Linguistic Introduction to History.
5. Dravidic Studies (1—4) (Madras University Publication).
6. Dravidian Philology by Dr. C. Narayana Rao.
7. Studies in Dravidian Philology by K. Ramakrishnayya (Madras University Publication).
8. Chatterji, S. K.—The Origin and Development of the Bengali Language, Volume I, Introduction: Sections 1—40 and Appendix B.
9. A Grammar of the oldest Kannada Inscriptions, by Dr. N. Narasimhiah (Mysore University Publication).

For Consultation.—

1. Jesperson: Language, its origin, theory and development.
2. Bloomfield: Introduction to the Study of Language (G. Bell & Sons).
3. Sesha Ayyangar: Dravidian India, Volume I.
4. Bagchi, P. C.: Pre-Aryan and Pre-Dravidian India.
5. Gune: Introduction to Comparative Philology.

B. Text-Books—General.

1. Bharata by Pampa, Chapters 1 and 2.
2. Gada Yuddha by Ranna (whole).
3. Ramacandra Carita Purana (Nagacandra), Chapters 1 and 2.
4. Yasodhara Caritre Sangraha by Janna (Mysore University edition.)
5. Dharmamrta by Nayasena, Chapters 1 and 2.
6. Adbhuta Ramayana by Muddana.
7. Sidharama Caritre by Raghavanka (Karnataka Sangha, Shimoga).
8. Sakuntala Nataka by Basappa Sastri.
9. Mitravinda Govinda Nataka by Singararya.
10. Raktakshi by K. V. Puttappa.
11. Kannada Bavuta (Sahitya Parishat, Bangalore).
12. Karnataka Sahitya Samskriti Darsana by S. S. Malwad.

13. Gopalakrishna Gokhale by D. V. Gundappa.
14. Kabbigara Kava by Andayya.

C. Text-Books—Special.

1. Girija Kalyana (edited by Dr. Nandi Mutt, L. E. Association, Dharwar).
2. Basavaraja Devara Ragale by Harihara (edition by T. S. Venkannayya).
3. Rajasekhara Vilasa by Shadakshari.

D. *Grammar, Prosody and Poetics.*

1. Sabdamani Darpana by Kesiraja. } Basel Mission Book
2. Chhandombudhi by Nagavarma. } Depot, Mangalore.
3. Rasa Ratnakara by Salva (Madras University Publication).
4. Kavi Samaya by Ramanujiengar (Kavya Kalanidhi Office, Mysore).
5. Kannada Kaipidi, Vol. I (Mysore University Publication).
6. Apratima Vira Carite by Tirumalarya.
7. Kavyavalokana (Dharwar Edition).
8. Kaviraja Marga (Madras University Publication).

E. *History of Literary Criticism.*

For Study.—

1. History of Kannada Literature (Readership lectures by R. Narasimhachariar. Mysore University Publication).
2. Karnataka Kavi Charite, by R. Narasimhachariar. Volumes 1, 2 and 3. (R. A. Tirunarayana Ayyangar, Malleswaram, Bangalore).
3. Kelavu Kannada Kavigala Kala Vichara by Venkatasubbiah (Karnataka Sangha, Central College, Bangalore).
4. Abhinava Pampa (Karnataka Sanga, Karnataka College, Dharwar).
5. Ranna Kavi Prasasthi (Satya Sodhana Book Depot, Fort, Bangalore).
6. Kavi Lakshmisa by various authors—(Satya Sodhana Book Depot, Fort, Bangalore).
7. Sahitya Mattu Vimarse by D. R. Bendre (Manohar Grantha Prakasan Samiti, Dharwar).

For consultation.—

1. Hudson : Introduction to the Study of English Literature.
2. Worsfold : Principles of Criticism.
3. Lascelles Abercrombie : Literary Criticism.

F. *South Indian History and Inscriptions.—*

South Indian History.—

The Syllabus as for B.A. Group (v)—Chapters I—XXV of the Syllabus.

Inscriptions.—

Selections of Inscriptions, prescribed by the University from time to time.

MALAYALAM.

I. *History of Language and Philology.—*

For Study :—

1. Vendryes : Language, a Linguistic Introduction to History.
2. Gune : Introduction to Comparative Philology.
3. Caldwell : A Comparative Grammar of the Dravidian Languages.
4. Chatterji, S. K : Indroduction (1—149 pages)—in the 'Origin and Development of the Bengali Language,' Vol. I and Appendix B.
5. Dravidic Studies, Nos. 1—4, Madras University Publications (The Superintendent, Government Press, Mount Road, Madras).
6. Grierson : Linguistic Survey, Vol. IV.
7. L. V. Ramaswami Ayyar : Grammar in Leelatilakam (College, Ernakulam).
8. Dr. L. A. Ravi Varma : The relation between the Aryan and Dravidian Languages. (Malayalam Improvement Committee, Trichur).

For Consultation.—

1. Jesperson : Language, its origin, theory and development.
2. Sweet : The History of Language (Temple Primer).
3. Bloomfield : Introduction to the Study of Language (G. Bell & Sons).
4. T. R. Sesha Iyengar : Dravidian India, Vol. I.
5. Bagchi, P. C. : Pre-Aryan and Pre-Dravidian India.
6. Moonnu Cheppetukal by T. K. Joseph, B.A., L.T., Trivandrum.

7. Huzur Office Plates of Kokkarunandakkar—Travancore Archaeological Series, Vol. I.

8. Specimens of Vatteluttu Inscriptions—Travancore Archaeological Series, Vol. I.

9. Huzur Plates—Travancore Archaeological Series, Vol. II.

10. Studies in Dravidian Philology by K. Ramakrishnayya, M.A., (Madras University Publication).

II. *History of Literature and Literary Criticism.—*

For Study :—

1. Govinda Pillai: History of Malayalam Literature, Vols. I and II.

2. R. Narayana Panikkar: Kerala Bhasha Sahitya Charitram, Vols. I and II.

3. Attur Krishna Pisharoti: Sahitya Charitram, Vol. I.

4. Ulloor S. Parameswara Ayyar: Vignanadeepika, Vol. I.

5. P. M. Sankaran Nambiar: Sahityalocanam (The Maharaja's College, Ernakulam).

6. Sahityadarpanam, Part I, (Malayalam Improvement Committee, Trichur).

For Consultation.—

1. Hudson: Introduction to the Study of English Literature.

2. Lascelles Abercrombie: Literary Criticism.

3. Worsfold: Principles of Criticism.

4. Praceena Keralam by M. R. Balakrishna Warrier, M.A., University College, Trivandrum.

5. History of Kerala, Vols. I, II, III and IV by K.P. Padmanabha Menon, B.A., B.L., (from M. Narayana Menon, B.A., B.L., Vakil, Ernakulam).

6. History of Cochin, Vols. I and II by K. P. Padmanabha Menon, B.A., B.L., (from M. Narayana Menon, B.A., B.L., Vakil, Ernakulam).

7. Bhasha Lipikal by L.A. Ravi Varma, (Malayalam Improvement Committee. Trichur).

8. Ezuttaccan and his Age by Dr. C. A. Menon, (Madras University Publication).

9. Kavyalokam, by P. Krishnan Nayar, (Madras University Publication).

III. *Literature—General*:—

1. Rama Caritam, Patalams 25 to 50.
2. Bhasha Bhagavad Gita by Madhava Panikkar. Edited by K. Parameswaran Pillai, M.A., Nanthiyarveedu, Trivandrum.
3. Unnunili Sandesam. (Edition by Attur Krishna Pisharoti, Trichur).
4. Bharatam Sambhava Parvam by Tuncat Ezhuttacchan.
5. Girijakalyanam by Unnayi Varier (Travancore Government Press).
6. Nalacaritam Kathakali—First Day; Kalakeyavadham; and Rukminiswayamvaram.
7. Syamantakam and Kalyanasougandhikam by Kuncan Nambiar.

Drama:—

1. Abhignana Sakuntalam by Vallathol Narayana Menon, Cheruthuruthi, Cochin State.
2. Ascarya Chūdamani by Kunhikuttan Thampuran, (B. V. Book Depot and Printing Works, Trivandrum).

Modern Poetry:—

1. Raghuvamsam, Translated by Kundoor Narayana Menon—Sargas 1 to 4, (Kamalalaya Book Depot, Trivandrum).
2. Magdalanamariam (Mary Magdalene), by Vallathol Narayana Menon, Cheruthuruthi, Cochin State.
3. Prarodanam by N. Kumaran Asan, (Sarada Book Depot, Thonnakkal, Trivandrum).
4. Sundara Kandam Tullal by Kochunni Tampuran, Part I.

Prose:—

1. Dūtavakyam (Cochin Malayalam Improvement Committee, Maharaja's College, Ernakulam).
2. Dharma Raja by C. V. Raman Pillai—(S. T. Reddiar, V. V. Press, Quilon).
3. Cilappadikaram (Published by the Cochin Malayalam Improvement Committee, Maharaja's College, Ernakulam).
4. Tuncatt Ezuttacchan by P. K. Narayana Pillai, (S. R. V. Press, Quilon).
5. Sahityapravesika by Sooranad P. N. Kunjan Pillai, M.A., (V. V. Book Depot, Trivandrum).

IV. *Literature—Special Period*.—

1. Krishnagatha—from the beginning to the end of Kamsasadgati omitting Rasakreeda.

2. Bhasharamayana Champu—to the end of Parasuramavijayam (Travancore Government Press, Trivandrum).

3. Vadakkanpattukal (Ballads of North Malabar), Vol. I by Dr. C. Achyuta Menon (University of Madras).

V. *Grammar, Prosody and Poetics* :—

1. Leelatilakam, edited by Attur Krishna Pisharoti.
2. Kerala Paniniyam, by A. R. Raja Raja Varma, M.A.
3. Vrttamanjari Do.
4. Bhashabhushanam Do.
5. Dravida Vrttangal and their different phases by Appan Thampuram.
6. Bhasha Darpanam, Vol. I by Attur Krishna Pisharoti.
7. Nataka Pravesika by A. D. Harisarma.

For Consultation :—

1. Prayogadeepika, by P. K. Narayana Pillai, B.A., B.L.
2. Mani Deepika by A. R. Raja Raja Varma, M.A.

VI. *South Indian History and Inscriptions* :—

South Indian History.—

The Syllabus as for B.A. (Group (v)—Chapters I—XXV of the Syllabus.

Inscriptions.—

Selections of Inscriptions prescribed by the University from time to time.

URDU.

History of Language and Philology :—

For Study :—

Introduction to Ab-i Hayath-Azad.
Urdu-i-Quadin—Shamsullah Quadri.
Hindusthani Lisaniyath—Dr. Zore.
Hindustani Sawtiyat.
Indo-Aryan and Hindi—Chatterjee.
Manshurat by Kayfi.
Kayfiyyah by Kayfi.

For consultation:

Jesperson: Language, its Origin, Theory and Development.

Sweet: The History of Language (Temple Primer).

Bloomfield: Introduction to the Study of Language (G. Bell & Sons).

History of Literature and Literary Criticism:

For Study.—

Khutbath-i-Garcin de Tacy—Ras Maswood and Dr. Yusuf Hussain.

Tarikh-i-Adab-i-Urdu—Askari.

Deccan Men Urdu—Hashimi.

Tarkh-i-Nathr-i-Urdu—Ahsan Marharvi.

Mazamin-i-Sharar—Vol. IV.

Mazamin-i-Chakbast.

Muqaddamath-i-Abdul Haq.

For consulation:—

Hamari Sha'iri—Razvi.

Marhoom Delhi College—Abdul Huq.

Tanqidat-i-Abdul Haq.

Adab Awr Zindagi by Majnun Gorakhpuri.

Ruh-i-Tanqid by Zore.

LITERATURE—GENERAL.

For Study:—

Prose:

Sab Ras—Mowlana Wajhi.

Bagh-o-Bahar—Mir Amman.

Fsanaa-i-Azad, Vol. II—Sarshar.

Adabi—Khututh-i-Ghalib—Ashkari (Ghalib's letters only).

Makatibi Ghalib by 'Arshi.

Maqalat-i-Hali.

Khutbat-i-Ahmadiyyah.

Poetry:

Kulliyat-i-Wali, Introduction and first 114 pages.

Masnawi Qutb wa mushtari.

Diwani—Nazir Akbarabadi.
Qasayid-i-Zouq.
Diwan-i-Ghalib.
Ghulzar-i-Nasim.
Kulliyat-i-Mohsin.
Intikhabi—Kalami—Mir.

LITERATURE—SPECIAL PART.

For Study :—

Prose :
Tanziyat wa Muzhikat.
Delhi Ki chand 'Ajib Hastlyan.
Khiyalistan—Sajjad Hyder.
Athari Iqbal.
Faust.
Maqalat-i-Shibli.

Poetry :
Musaddas-i-Hali.
Kulliyat-i-Akbar.
Bal-i-Jibrail—Iqbal.
Zarbi—Kalim by Iqbal.
Junun wa Hikmat by Josh.
Surud-i-Zindagi by Asghar.

For consultation :

Special and General Parts.
Iqbal by Anjuman Taraqqi-i-Urdu.
Iqbal Ka Mutali' ah by Niyazi.
Fikri Iqbal by Ghulam Dastagiri.
Ghalib—Ghulam Rasool Mehr.
Ghalib—Dr. Abdul Latheef.
Akbar—Talib Benarasi.
Jadid Urdu Shairi—Prof. Abdul Qadir Sarvari.
Drama Ki Tarikh by Nur Ilahi and Muhammad Umar.

For Study :—
Grammar, Prosody and Poetics.
Aaw'id-i-Urdu—Abdul Haq.
Tas-hilul Balaghat.
Urdu Grammar—Platts.
Waz'i Istilahat—by Salim.
Darya-i-Latafath—by Inshaullah Khan.

Subsidiary Subjects.

ARABIC.

For Study :—Majani ul Adab—Vol. II.

Asba'qun Nahv—Hamidduddin Farahi.

PERSIAN.

For Study :—Ganjinai—Adab by Ja'fari.

Persian Grammar—Sufi Abdul Aziz.

HINDI.

1. Chune Hue Phul (omitting Dusara guchcha)—Published by the D. B. Hindi Prachar Sabha, Thyagarayanagar, Madras.
2. Hindi Madhuri, Part I—Published by the D. B. Hindi Prachar Sabha, Thyagarayanagar, Madras.
3. Prem Panchami by Premchand. Hindi Prachar Book Depot, Thyagarayanagar, Madras.

Branch XI.

A DRAVIDIAN LANGUAGE OR URDU AND ITS LITERATURE.

1952.

TAMIL.

The same as for 1951.

TELUGU.

Old Poetry :

1. Bharatam—Adiparvam—Cantos 4, 5 and 6.
2. Bharatam—Asramavasaparvam (whole).
3. Ranganatharamayanam—Sundarakandam.
4. Sringara Naishadam—Cantos 1 and 2 (from the beginning of the story).
5. Harischandranalopakhyanam—Canto 2.
6. Kalahastimahatmyam—Natkiruni Katha.
7. Yayati Charitram—Canto 2.

Modern Poetry :

1. Buddha Charitra--Tirupati Venkata Kavulu.
2. Vytalikulu Ed. by Muddukrishna.

Drama :

1. Naganandamu by Vedam Venkataraya Sastri.
2. Mallikamarutaprakaranamu by Vaddadi Subbarayudu.
3. Ekankikanatikalu Ed. by S. Gopalakrishnamurti.

Prose:

1. Studies in Andhra Bharatam by K. Ramakrishnayya.
2. Vyasamanjari by C. R. Reddi.

Grammar, Prosody and Poetics:

1. Balavyakaranam.
2. Proudavyakaranam.
3. Appakaviyam, Canto 3.
4. Dasarupakam Ed. by M. Suryanarayana Sastri—Cantos 3 & 4.
5. Sahitya Darpanam Ed. by Vedam Venkataraya Sastri—Canto 3.
6. Kavyatma—by Raghava Ayyangar.

Special Period:

Age of Srinatha (1352-1500).

History of Language and Philology.

For Study:

1. Comparative Grammar of the Dravidian Languages by Caldwell.
2. Dravidic Studies, 1-4 (M.U. Publication).
3. History of the Telugu Language (Andhra University Publication) by Dr. C. Narayana Rao.
4. Studies in Dravidian Philology by K. Ramakrishnayya.
5. Andhra Bhashavikasam by G. J. Somayaji.

For Consultation:

1. Language—A Linguistic Introduction to History by Vendreys.
2. Introduction (pp. 1-140) to the Origin and Development of Bengali Language by S. K. Chatterji.
3. Language, its Origin, Theory and Development by Jesperson.
4. History of Language by Sweet (Temple Primer Series).
5. Introduction to the Study of Language by Bloomfield.

History of Literature and Literary Criticism.

For Study:

1. Lives of Poets by K. Veeresalingam.
2. Andhra Vangmaya Charitra Sangraham by Kavitwavedi.
3. Andhra Kavitwa Charitram by Basavaraju Appa Rao.
4. History of Telugu Literature by P. Chenchiah and Bhujanga Rao (Heritage of India Series).
5. Kavitwatatwavicharam by C. R. Reddy.

For Consultation :

1. Andhra Vangmaya Charitra by Vanguri Subba Rao.
2. Andhra Kavitarangini—Vol. I by Chaganti Seshayya.
3. Andhra Vangmaya Charitra by K. Nageswara Rao.
4. Indroduction to the Study of English Literature by Hudson.
5. Literary Criticism by Lascelles Abercrombie.
6. Principles of Literary Criticism by Winchester.
7. Principles of Literary Criticism by Worsfold.

South Indian History and Inscriptions.

South Indian History :

According to the Syllabus for B.A. Group (v).

Inscriptions :—

Selections of Inscriptions prescribed by the University from time to time.

KANNADA.

The same as for 1951.

MALAYALAM.

(Will be prescribed later).

URDU.

(Will be prescribed later).

HINDI—SUBSIDIARY.

The same as for 1951.

Inscriptions for Branch XI—B.A. (Hons.) Degree Examination.

The following list of inscriptions has been provisionally recommended to be studied in relation to South Indian History for the respective Dravidian Languages for Branch XI of the B.A. (Hons.) Degree Examination. *Attention should be devoted particularly to the Historical portions of the Inscriptions.*

LIST OF INSCRIPTIONS.

ABBREVIATIONS.

A.S.P.P.—Andhra Sahitya Parishat Patrika.

E.C.—Epigraphia Carnatica.

E.I.—Epigraphia Indica.

H.A.R.—Hyderabad Archaeological Report.

H.A.S.—Hyderabad Archaeological Survey.

I.A.—Indian Antiquary.

J.A.H.R.S.—Journal of the Āndhra Historical Research Society.

M.E.R.—Madras Epigraphy Reports.

N.D.I.—Nellore District Inscriptions, Butterworth and V. Chetty.

P.D.—Inscriptions of the Pudukōṭṭai State.

S.I.I.—South Indian Inscriptions.

S.P.M.—S'asana Padya Mañjari by J. Ramayya Pantulu.

T.A.S.—Travancore Archaeological Series.

V.V.C.—Velugōṭivāri Vams'a Charitra.

Sources—Sources of Vijayanagar History.

TAMIL AND MALAYALAM.

Pallava Inscriptions.

1. Kūram plates of Paramēs'vara Varman I, S.I.I., Vol. i.
2. The Kas'akudi plates of Nandivarman Pallava Malla. S.I.I., Vol ii, Part iii.
3. The Tiruvellarai Inscription of Dantivarman. E.I., Vol. xi.
4. The Vēlūrpālayam plates of Nandivarman III. S.I.I., Vol. ii, Part v.
5. Tirukkalukkunram Inscription of Rājakēsarivarman (Chōla E. I., Vol, iii, p. 279.

Pāṇḍyan Inscriptions.

I. Vēlvikuḍi grant of Neduñjaḍaiyan. E.I., Vol. xvii, pp. 298 ff.

II. Mānūr Inscription of Māṟañjaḍaiyan. E.I., Vol. xxii, Part. I.

III. The Larger S'innamanūr plates. S.I.I,. Vol. iii, Part iv.

Chōḷa Inscriptions.

I. Anbil plates of Sundara Chōḷa. E.I., Vol. xv. pp. 58 ff.

II. Tanjore inscriptions of Rajaraja I. S.I.I., Vol. ii, Part i, Nos. 1 and 4.

III. Ukkal Inscriptions of Rājarāja I. S.I.I., Vol. iii, Part i, No. 4, p. 7.

IV. Mēlpāḍi Inscription of Rājarāja I. S.I.I. Vol. iii, Part i, No. 15, p. 23.

V. Inscriptions of Rājēndra I. S.I.I., Vol. ii, Part i, Nos. 7 and 20.

VI. Rājādhirāja—Maṇimangalam Inscription. S.I.I., Vol. iii, Part i, No. 28, pp. 53 ff.

VII. Rājendrā II— Māṇimangalam Inscription. S.I.I., Vol. iii, Part i, pp. 59 ff.

VIII. Maṇimangalam Inscription of Virarājendra. S.I.I., Vol. iii, Part i, pp. 65 ff.

IX. Kanyākumāri Inscription of Virarājēndra. E.I. Vol. xviii, No. 4.

X. Jambukēs'varam Inscription of Kulottuṅga Chola I. S.I.I., Vol. iii, Part ii, No. 76, pp. 168 ff.

XI. Vikramachōla Inscription from Tirumalavāḍi. S.I.I., Vol. iii. No. 79, pp. 182 ff.

XII. Two Inscriptions of Kulōttunga II. S.I.I., vii, No. 150, 407.

XIII. One Inscription of Rājarāja II. S.I.I. vii, No. 458.

XIV. Two Inscriptions of Rājādhirāja II. S.I.I., vi, No. 438, vii, No. 890.

XV. Two Inscriptions of Kulōttunga III. S.I.I., Vol. iii, Part ii, No. 88, p. 217, P.D. Nos. 163 and 166.

XVI. Two Inscriptions of Rājarāja III, S.I.I, iv, 424: E.I. vii, p. 167.

XVII. One Inscription of Rājēndra III. S.I.I., iv, 511.

Chēra Inscriptions.

Inscriptions of Bhāskara Ravi Varman. T.A.S., ii.

Inscriptions of Sthāṇu Ravi—T.A.S., ii.

The Huzūr Office plates. T. A. S., Vol. ii, pp. 131 ff. lines 1—54.

Kollam 149—Māmballi plate of S'rīvallabhangōdai. T. A. S., Vol. iv, Part i.

Kollam 302—Chōḷapuram Inscription of Vira Keralavarman. T. A. S., Vol iv, Part i.

Kollam 364—Kollūr Maḍam plates of Vira Udaiya Mārttāṇḍavarman: T. A. S.. Vol. iv, Part I.

Kollam 390—Kaḍinanguḷam Inscription of Rāman Kērlāvarman. T.A.S., Vol. iv, Part i.

Kollam 395—Tirunayinārkuṛichchi Inscription. T.A.S. Vol. iv, Part i.

Kollam 426—Arrūr plates of Vira Ravi Udaiyamārttāṇḍavarman. T.A.S., Vol. iv, Part i.

Kollam 491—Kēraḷapurām Inscription of Vira-Udaiya-mārttāṇḍa-varman, 4th year of the reign. T.A.S., Vol. iv, Part i.

Kollam 646—Suchindram Inscription of Vira Rāma Rāmavarman T.A.S., Vol. iv, Part I.

Kollam 653—Quilon inscription. T.A.S., Vol. iv, Part i, p. 98.

Kollam 712—Suchindram Inscription of Veṇrumaṇkoṇda Bhūtalavira Ravivarman. T.A.S., Vol. iv, Part i. p. 102.

Kollam 935-936—Kanyākumāri plate of Balarāmavarman. T.A.S. Vol, iv, Part i.

Kēralapuram Inscriptions. T.A.S., Vol v, Part ii, p. 93.

TELUGU AND KANNADA.

Telugu.

1. The Mālēpāḍu plates. About the middle of the sixth century, of S'aka era. E.I. xi, pp. 344-6.
2. An inscription of Pallava Bādi Mahārāja. S'. 642 (?). N.D.I. (Kg. 25).
3. Peḍlūru inscription of Duggirāja. N.D.I. (Kr. 27).
4. Addanki inscription of Pāṇḍuranga. S'. 770 (?): E.I. xix, p. 275.
5. Dharmavaram inscription. S'. 770 (?). Bhārati, Vol. v, 1928-9, pp. 618-9.
6. Yuddhamalla's Bezwāḍa inscription. S'. 820. E.I. xv, p. 88.
7. Ammarāja Vijayāditya's Dharmavaram inscription Bhārati, v, p. 613.
8. The Nandampūṇḍi grant of Rājarājanarēndra. 32nd year. E.I. iv, p. 303.
9. Drākṣārāmam inscription of Vishṇu Vardhana. S'. 987. S.I.I., iv, 1007.
10. S'aktivarman's Prabhuparru inscription. A.S.P.P. ii, p. 399.
11. The Dirghasi inscription. S'. 997. E.I. iv, p. 45.
12. An inscription of Kulōttuṅga I. 23rd year S'. 1015 (?). S.I.I. iv, 1239.
13. An inscription of Kulōttuṅga I. S.I.I., iv, 1281.
14. Chēbrōlu inscription of Paṇḍa. S'. 976 (?)/S'. 1040. S.I.I. vi, 117.
15. Indrakila Hill inscription of the time of Sarvalōkāsraya Vishṇu Vardhana S'. 1037. S.I.I. iv, 737.
16. Piṭhapuram inscription of Vira Chōḍa. E.I. v, p. 71.
17. Niḍubrōlu inscription of Vikrama Chōḍa. S'. 1054. S.I.I. vi, 123.
18. Nādeṇḍla inscription of Chōḍanṛipa. S'. 1054. S.I.I. iv, 662.

19. Nādeṇḍla inscription of Manmamaṇḍa S'. 1061. S.I.I. iv, 672.
20. Nādeṇḍla inscription of Gaṇṭa. S'. 1062. S.I.I. iv, 675.
21. Konidena inscription of Tribhuvanamalla. S'. 1064. S.I.I. vi, 624.
22. Nādeṇḍla inscription of Buddha. S'. 1065. S.I.I. iv, 683.
23. Chebrōlu inscription of Paṇḍa. S'. 1065. S.I.I. vi, 103.
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25. Koṇidena inscription of Bāṇa Chūraballi. S'. 1073. S.I.I. vi, 640.
26. Bāpaṭla inscription of Rājarāja II. S'. 1078. S.I.I. vi, 183.
27. Bāpaṭla inscription of Velanāṭi Gonka. S'. 1082. S.I.I. vi, 184.
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29. Amarāvati inscription of Sāmanta Kallapa Nāyaka. S'. 1082. S.I.I. vi, 247.
30. Anumakoṇḍa inscription of Kakati Rudra. S'. 1084. I.A. xi, p. 9.
31. Amarāvati inscription of Kōṭa Kēta. S'. 1104. S.I.I. vi, 224.
32. Piṭhāpuram grant of Mallidēva. S'. 1117. E.I. iv, p. 87.
33. Chebrōlu inscription of Jāyappa. S'. 1135. E.I. vi, p. 43.
34. Bezwāḍa inscription of Kōnakanḍrāḍi Bhimarāja. S'. 1135. S.I.I. iv, 780.
35. Koṇidēna inscription of Oppilisiddhi. S'. 1146. S.I.I. vi, 628.
36. S'rīkūrmam inscription of Anantavarman. S'. 1152. S.I.I. v. 1290.
37. Upparapalle inscription of Recherla Kāṭa. S'. 1157. H.A.S. No. 3.
38. Simhāchalam inscription of Gajapati Narasimha. S', 1172. S.I.I. vi, 1052.
39. S'rīkūrmam inscription of Kalinga Gajapati Narasimha. S'. 1172. S.I.I. v. 1188.
40. Sārangapuram grant of Sārangadhara. S'. 1176. N.D.I. Cp. 17.
41. Gangavaram inscription. S'. 1176. N.D.I. i. D. 25.
42. Malkāpuram inscription of Rudrāmbā. J.A.H.R.S. iv, Parts 3 and 4.
43. S'rīkūrmam inscription of Naraharitirtha. S'. 1203. E.I. vi, p. 260.
44. Aluvalapāḍu grant of Tripurāridēva. S'. 1196. N.D.I. i, D. 1.
45. Chiramana grant of Manumagaṇḍagōpala. S'. 1207. N.D.I. A. 25.
46. Kocherlakōṭa inscription of the time of Pratāparudra. S'. 1232. N.D.I. i. D. 35.

47. Gaṇḍavaram inscription. N.D.I. ii, N. 15.

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52. Amarāvati inscription of Kētaya Vēma. S'. 1283. S.I.I. vi. 226.

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54. Ayyanavōlu inscription of Anapōta Nāyuḍu. S' 1291. V.V.C. App. No. 4.

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56. Amīnābād inscription of Peda Kōmati Vēma. S'. 1298. S.P.M. No. 68.

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62. The Palivela inscription of the time of Doḍḍaya Alla. S'. 1338. S.I.I. v, No. 113.

63. Rajahmundry Museum plates of Annadēva Chōḍa. S'. 1338. J.A.H.R.S. i. pp. 173—89.

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68. The Koṇḍāviḍu plates of Gaṇadēva. S'. 1377. I.A. xx, pp. 390-3.

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71. Dēvulāpalli plates of Immaḍi Narasimha. S' 1427. E.I. vii, p. 80.

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74. Krishṇarāya's Udayagiri inscription. S'. 1436. N.D.I., U. 40.
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77. Krishṇarāya's Bezwāḍa inscription. S'. 1440. S.I.I. iv, 789.
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65. Malabhāgalu inscription of the time of Somes'ekhara Nāyaka. S'. 1588. E.C. viii, Tl. 156.

Branch XII.

HINDI LANGUAGE AND LITERATURE.

1949—1952.

History of Language and Philology—

1. Hindi Bhasha ka Itihas by Dhirendra Varma, (Hindustani Academy, Allahabad).
2. Bhasha Vigyan by Syamsundardas, (Indian Press, Ltd., Allahabad).
3. Indo-Aryan and Hindi by S. K. Chatterji (Gujerat Vernacular Society, Ahmedabad).
4. Grierson : Linguistic Survey, Volume I.
5. Giles—Short Manual of the Comparative Philology for classical students (Macmillan).
6. Bloomfield—Introduction to the study of language.

(*N.B.*—4, 5 and 6 are for reference only).

Prescribed Text-books—Ancient :—

M.M. Jayasi : Samkshipta Padmavat (Indian Press, Allahabad).

Tulsidas : Kavitavali.

Santabani (Edited by Viyogi Hari and Published by Sasta Sahitya Mandal).

Bihari Sangrah, (Nagari Pracarini Sabha).

Sur Padavali : edited by Girija dath Sukla 'Giris' to 86 pages.

Vidyapati—Kirtilata.

Prescribed Text-books—Modern Prose :—

Sada. Misra : Nasiketopakhyan.

Ramachandra Sukla : Goswami Tulsidas.

Parishad Nibandhavali, Part I. (Ramnarain Lal).

Galpamanjari (Edited by Sudarsan and Published by Motilal Benarasidas., Lahore).

Premchand : Godan.

Drama :—

Jayasankar Prasad : Skanda Gupta.

Makhanlal : Krishnarjun Yudh.

Raja Lakshman Singh : Sakuntala.

Bharatendu Harischandra : Mudra Rakshas.

Amba (Udaya Sankar Bhat, Lahore).

Poetry :—

Siddharth by Anup Sarma (Hindi Granth Ratnakar Karyalaya, Bombay).

Maithili Saran Gupta : Yasodhara.

Niraja by Mahadevi Varma (Indian Press, Ltd., Allahabad).

Grammar, Prosody and Poetics :

Hindi Vyakaran : Kamta Prasad Guru.

Grammar of Hindi Language : Kellog.

Chhand Prabhakar : Bhanu.

Navaras by Gulab Rai (Hindi Sahitya Sammelan).

Alankara Manjusa : Lala Bhagavan Din.

Kavya Mimamsa : Rama Sankar Sukla 'Rasal'

History of Literature and Criticism :—

Hindi Sahitya ka Itihas : Ramachandra Sukla.

Adhunik Hindi Sahitya ka Itihas : Krishna Sankar Sukla.

Hindi Gadya Saili ka Vikas : Pandit Jagannath Sarma.

Sahityalochan : Syam Sundar Das.

Sahitya ki Upakramanika : Kisoridas Vajpei.

Adars aur Yatharth by Purushotham (Nagari Pracharini Sabha, Kasi).

Rupak Rahasya by Syamsundardas.

Sahitya Siksha by P. P. Bakshi.

N.B.—All the above books can be had of the Hindi Prachar Book Depot, Tyagaroyanagar, Madras.

SANSKRIT—SUBSIDIARY.

1. Kalidasa's Meghasamdesa, (Nirnaya Sagara edition).
2. Kalidasa's Vikramorvasiya, (Nirnaya Sagara edition).
3. Kadambari Samgraha Purvabhaga—from the beginning up to the end of Sukanasopadesa—(To be had at Munitrayamandiram, Kumbakonam).

Note.—The paper on *Subsidiary Subject—Sanskrit*—shall deal with prescribed Text-books and shall include also a passage or passages for translation from English into Sanskrit, the time allotted to Translation being one hour).

Branch XIII.

ISLAMIC HISTORY AND CULTURE.

(1) ADVANCED HISTORY OF ISLAM :—

Books recommended for study :—

Amir Ali : A Short History of the Saracens.
Le Strange : Baghdad during the Abbasid Caliphate.
Osborne : Islam under the Caliphs of Baghdad.
Arnold : The Caliphate.
Muir : The Caliphate : Its Rise, Decline and Fall.
Margoliouth : Mahomed.

For consultation :—

Le Strange : The Lands of the Eastern Caliphate.
Noldke : Sketches from Eastern History.
Zaydan : Umayyads and Abbasids.

(2) ISLAMIC LAW AND CONSTITUTION :—

Books recommended for study :—

Guillaumme : The Traditions of Islam.
Macdonald : Muslim Theology, Law and Constitution.
Rahim : The Principles of Muhammadan Jurisprudence. (Select Chapters).
M. U. Y. Jung : Administration of Justice and Muslim Law.
Mahomed R. Yousuf : Tagore Law Lectures.

For consultation :—

Arnold : The Preaching of Islam.
Macdonald : Development of Islamic Jurisprudence (Select Chapters).
Winsinck : The Muslim Creed.

(3) & (4) TWO SPECIAL SUBJECTS, with periods of Islamic History to be studied along with original authorities, the subjects selected being taken from the list below :—

(a) THE MUGHALS AND THE RAJPUTS :—

Original Sources—

Elliot and Dowson : The History of India as told by its own Historians.

Abul Fazl : Akbarnama.

Bernier : Travels in the Moghul Empire.

A. Dow : The History of Industan.

Modern Works—

Rajputana Gazetteer, 3 Vols.
J. Todd: Annals and Antiquities of Rajasthan.

(b) THE BAHMINI RULERS AND THE VIJAYANAGAR KINGDOM:—

Original Sources—

Ferishta: Gulshan-i-Ibrahimi.
Khafi Khan: Muntakhab-ul-Lubab.
Abul Quasim: Hadiqat-ul-Alām.
J. S. King: The History of the Bahmini Dynasty.
W. Haig: History of the Nizam Shahi Kings.
S. Krishnaswami Ayyangar: Inscriptions of Vijayanagar.

Modern Works—

H. Krishna Sastri: The Dynasties of Vijayanagar.
R. Sewell: A Forgotten Empire.
S. Krishnaswami Ayyangar: South India and Her Muhammadan Invaders.
S. Krishnaswami Ayyangar: A little known chapter of Vijayanagar History.

(c) THE MUGHAL ADMINISTRATION:—

Original Sources—

Abul Fazl: Ain-i-Akbari.
Ahmed Nizamuddin: Tabkati Akbari.
Bernier: Travels in the Moghul Empire.
Khafi Khan: Muntakhab-ul-Lubab.
Elliot & Dowson: The History of India as told by its own Historians.

Modern Works—

J. Sarkar: Moghul Administration.
Dr. Ibn Hassan: Moghul Government.
Dr. R. P. Tripathi—Muslim Kingship. Some aspects of Muslim Administration.

(d) COMMERCE AND INDUSTRY UNDER THE MOGHULS:—

Original Sources—

Abul Fazl: Ain-i-Akbari.
Tavernier: Travels in India.
Manucci: Storia du Mogor.

Modern Works—

Moreland: India at the death of Akbar.
Moreland: India from Akbar to Aurangazeb.

(5) POLITICS—
(6) ECONOMICS— } as for Branch III (History).
(7) ESSAY—

APPENDIX V.

B.Sc. DEGREE EXAMINATION.

SYLLABUSES AND TEXT-BOOKS.

(i) Mathematics—Main.

The same as for B.A. (Pass) Main (*i.e*) Group (i-b), omitting optional subjects with the addition of—

Differential equations, ordinary and partial.

The standard to be as in Murray's Differential Equations when those parts are omitted which concern only the student of Pure Mathematics.

Mathematics—Subsidiary.

The same as for B.A. Mathematics—Subsidiary.

(ii) Statistics—Main.

The same as for B.A. Group (i-c) with the following additions :—

Under 'Two Variables', *add* 'Analysis of variance appropriate to double classifications.'

Under 'Sampling,' *add* 'Analysis of variance for k samples, and z tests.'

Add at the end, 'Analysis of Time Series, General Trend, Seasonal and Cyclical fluctuations. Application of periodogram analysis and analysis of variance (simple problems).'

Reference Book.—Mill's Statistics.

Statistics—Subsidiary.

The same as for Optional Subject for B.A. Group (i-b)—Elements of Statistics.

[*Note.*—The question paper in Subsidiary Statistics will be common with the paper under B.A. Gr. (i-b).]

(iii) Physics—Main.

(*Note* : The following Syllabus will be in force for the examination of 1949 only.)

The course includes a more extended study of the matter included in the Intermediate course and in addition the following :—

Dynamics :—Resolution and composition of displacements, velocities and accelerations. Curves of speed and velocity diagrams

Motion of a particle in one plane under constant acceleration. Simple harmonic motion; composition of simple harmonic motions. Angular velocity and angular acceleration; moment of velocity.

Statics.—Absolute units of force. Resolution and composition of forces. Angular momentum; moments of inertia in simple cases. The pendulum; determination of g. Work, energy, conservation of energy; energy diagrams. Impact; the ballistic pendulum. Simple cases of the dynamics of strings. Dimensions of dynamical units. Conditions of equilibrium of a body acted on by forces in one plane. Moments, couples. Laws of friction. Graphical methods with simple applications. Smooth hinges. Virtual work.

Hydrostatics.—Thrust of fluid on plane and curved surfaces. Floating bodies and conditions of stability. Properties of gases; determination of heights by barometer. Pumps, pressure gauges. Capillary phenomena and their explanation by surface tension; general theory of surface tension.

DETAILED SYLLABUS IN DYNAMICS, STATICS AND HYDROSTATICS.

Theorems.

If a moving point possess simultaneously velocities which are represented in magnitude and direction by the two sides of a parallelogram drawn from a point, they are equivalent to a velocity which is represented in magnitude and direction by the diagonal of the parallelogram passing through the point.

The relative velocity of one point B with respect to a second point A is obtained by compounding with the velocity of B a velocity which is equal and opposite to that of A.

To determine graphically, by means of a velocity-time curve the distance described in a given time by moving point.

A point moves in a straight line starting with velocity u and moving with constant acceleration a in its direction of motion; v be the velocity at the end of time t, and s be its distance at that instant from its starting point, then

(1) $v = u + at$

(2) $s = ut + \frac{1}{2}at^2$

(3) $v^2 = u^2 + 2\,as.$

To derive the equation $F = ma$ from the second law of motion.

To show that the change of momentum of a particle in a given time is equal to the product of the force which acts on the particle mand the tie during which it acts.

To determine the motion of a particle sliding down on rough inclined plane.

To show that the kinetic energy of a particle is equal to the product of its mass and one half of the square of its velocity.

To show that the change of kinetic energy per unit space is equal to the acting force.

To find the work done in stretching a spring by means of an energy diagram.

A smooth sphere or particle whose coefficient of restitution is 'e' impinges obliquely on a fixed plane; find the change in its motion.

To find the velocities after impact of—

(1) two smooth spheres impinging directly;

(2) two smooth spheres impinging obliquely.

To find an expression for the loss of kinetic energy when two smooth spheres impinge.

If a particle describe a circle of radius r with uniform speed v, to show that the acceleration is $\frac{v^2}{r}$ directed towards the centre of the circle.

To find an expression for the tension of the string of a conical pendulum.

A particle is projected into the air with the given velocity and direction of projection; show that its path is a parabola and find the range on the horizontal plane through the point of projection and the time of flight.

To find the range of a projectile on an inclined plane.

To find the velocity, acceleration and the periodic time of a point executing simple harmonic motion.

To find the resultant of two S. H. M.'s of the same period in the same straight line.

To find the resultant of two S.H.M.'s of the same period at right angles.

To find the period of oscillation of a compound pendulum when the amplitude is small.

To show that the centres of suspension and oscillation are reversible.

To show that if a moving point describe a circle, its angular velocity about the centre of the circle is equal to its speed divided by a radius of the circle.

The moment of inertia of a body through an axis is equal to the sum of the moment of inertia of the body about a parallel axis through the centre of gravity and the product of the mass of the body *into* the square of the distance between the axes.

The moment of inertia of a plane lamina about a perpendicular to its plane and meeting it in a point O is the sum of the moments of inertia of the lamina about any two axes at right angles in the lamina and intersecting one another at O.

To find the moment of inertia of a thin uniform rod about an axis through the centre and perpendicular to the length.

To find the moment of inertia of a circular lamina about an axis passing through the centre perpendicular to its plane.

To find the moment of inertia of a sphere about a diameter.

To find the moment of inertia of a cylinder about an axis through the centre of gravity perpendicular to the geometrical axis.

To find expressions for the angular acceleration, angular momentum and kinetic energy of a body rotating about an axis.

To find the work done by a torque (or couple) for a given angle of twist.

If a particle be acted on by two forces represented in magnitude and direction by the two sides of a parallelogram drawn from a point, they are equivalent to a force represented in magnitude and direction by the diagonal of the parallelogram passing through the point.

If three forces acting at a point be represented in magnitude and direction by the sides of a triangle taken in order, they will be in equilibrium.

If three forces acting at a point be in equilibrium, they can be represented in magnitude and direction by the sides of any triangle which is drawn so as to have its sides respectively parallel to the directions of the forces.

If three forces acting on a particle keep it in equilibrium each is proportional to the sine of the angle between the other two.

If any number of forces acting on a particle be represented in magnitude and direction by the sides of a polygon taken in order, the forces shall be in equilibrium.

To find the resultant of any number of forces in one plane acting upon a particle.

To find the conditions of equilibrium of any number of forces acting upon a particle.

To find the resultant of two parallel forces acting upon a body.

The algebraic sum of the moments of two or more forces about any point in their plane is equal to the moment of their resultant about the same point.

If three forces acting in one plane upon a rigid body keep it in equilibrium they must either meet in a point or be parallel.

Any system of forces acting in one plane upon a rigid body can be reduced to either a single force or a single couple or must be in equilibrium.

A system of forces in one plane acting upon a rigid body is in equilibrium if the sum of their components parallel to each of two lines in their plane be zero, and if the algebraic sum of their moments about any point be zero also.

To prove the principle of virtual work for a system of forces acting on a particle.

To show that the co-efficient of friction is equal to the tangent of the angle of friction.

To find the *least* force that will move a load *up* a rough inclined plane.

The pressure at any point of a fluid at rest is the same in all directions.

To find the resultant thrust of a fluid on a plane surface.

To find the condition of equilibrium of a body freely floating in a liquid.

If a body float freely and be slightly displaced so that it displaces the same quantity of liquid as before, then the body is in stable or unstable equilibrium according as the metacentre is above or below the centre of gravity of the body.

To show that surface tension is the same in all directions and at all points.

To show that the surface energy per unit area is numerically equal to the surface tension.

To find the relation between the radius of (1) a spherical drop, (2) a spherical bubble of a liquid, and the surface tension and pressure.

To find an expression for the rise of a liquid in a capillary tube.

To prove the formula for measuring surface tension of a liquid by Quincke's method.

To determine the difference in altitude between two stations with the aid of barometric readings at the two places.

To find the force with which two plates cling together which are pressed together so as to form a liquid film between them.

Properties of Matter.

Gravitation and gravity.—Newton's law of gravitation. Gravitation constant—mass and density of the earth. Experiments of

Cavendish and Boys. Methods of finding 'g'. Mehods of comparison of 'g' at various places. Effect of latitude and rotation of the earth on 'g'. Variation in 'g' due to altitude. Variation in 'g' below the surface of the earth.

Elasticity.—Stress, strain. Modulus of elasticity. Hooke's Law. Strains due to simple longitudinal pull. Elastic limit. Poisson's ratio. Compressibility and rigidity of solids. Young's modulus and its expression in terms of n and k. Simple twisting of wires of circular section by couple at right angles to its length. Torsional rigidity—torsion balance. Bending in one plane of bars of simple cross-sectional area (rectangular and circular). Relation between the bending moment at a point and the curvature of the neutral axis. I-form girders. Compressibility and elasticity of gases. Compressibility of liquids—Regnault's experiments. Osmosis—laws of osmotic pressure. Vapour pressure of solutions—boiling and freezing points of solutions.

Viscosity.—Explanation of viscosity of gases on the kinetic theory. Evaluation of co-efficient of viscosity of a liquid by flow of the liquid in a narrow tube. Comparison of viscosities.

Heat.

Expansion and thermometry.—Expansion of isotrophic solids. Expansion of liquids. Liquid in glass thermometers. Gas thermometers—constant pressure and constant volume. Resistance thermometers. Thermo-electric thermometers. Measurement of high and low temperatures: pyrometers.

Calorimetry.—Specific heat of solids—method of mixture—radiation crrection. Specific heat of liquids—method of mixture, method of cooling. Specific heat of gases—Jolly's experiment. Regnault's experiment.

Fusion.—Latent heat of fusion—Bunsen's ice calorimeter. Regelation.

Evaporation.—Latent heat of vaporization—total heat of steam. Vapour pressure of water—at high and low temperatures. Alteration of vapour pressure with curvature of liquid surface. The triple point.

Continuity of state.—Compressibility of gases at high and low pressures. Amagat's and Andrew's experiments. Van der Waals' equation and critical constants. Liquefation of gases.

Kinetic theory of gases.—Explanation of pressure of a gas and Avogadro's hypothesis. Molecular speed and absolute temperature of a gas. Internal work of expanding gases—Joule's experiments, porous plug experiment—Joule-Thomson effect. Relation between the specific heats of a gas and the gas constant. Evaluation of γ for various gases—elasticity of gases (isothermal and adiabatic). Adiabatic and isothermal transformations. Equation to the adiabatic of perfect gas. Methods of finding γ—Clement and Desormes' method velocity of sound.

Conduction and Diffusion of heat in solids.—Thermal conductivity and thermometric conductivity. Determination of conductivity of

good conductors. Lee's disc method for bad conductors. Forbes' method for conductivity of a solid.

Radiation and absorption.—Theory of exchanges. Emissive and absorptive powers. Instruments for measurement of radiation. Laws of cooling. Experimental verification of Stefan's law. Solar constant —effective temperature of the sun.

Laws of thermodynamics.—First law—Experiments of Joule, Rowland and Callendar. Work done in isothermal and adiabatic expansions. Heat engines and their general principle of working, Carnot's engine; indicator diagram: efficiency—Carnot's theorem. Second Law—thermodynamical scale of temperature. Ideal gas scale. Refrigeration. Applications: (1) Latent heat equation; (2) change of boiling point and melting point. Entropy; change of entropy for a reversible cycle: entropy—temperature diagram of Carnot's cycle; entropy and available energy.

Magnetism.

Magnets—determination of axis and moment. Potential at any point due to a small magnet—couple acting on a small magnet due to another.—A and B positions. Mutual force between two small magnets with their axes in a straight line. Magnetic potential—level surfaces. Magnetic shell—its potential. Magnetic induction. Intensity of magnetisation. Magnetic susceptibility and permeability, and their measurements. B—H, I—H curves—magnetometer method. Hysteresis —dissipation of energy. Para, dia and ferro magnetism. Magnetic field of the earth—the magnetic elements and their determination. The compass and its use.

Current Electricity.

Magnetic field due to a circular current. Magnetic field at a point inside a solenoid. Equivalent magnetic shell. Force exerted by a magnetic field on coil carrying current. Potential energy of circuit when placed in magnetic field. Tangent galvanometer—Helmholtz s pattern. Mirror galvanometers. Ballistic galvanometers—logarithmic decrement. Kirchhoff's law—applications to Wheatstone's net work. Resistance—specific resistance. Resistance thermometers—Callendar and Griffith's bridge. Electrolysis—Conductivity of electrolytes.

Ionisation—Velocity of Ions.—Cells—Primary cells, standard cells, accumulators. Potentiometer—Measurement of e. m. f., current and resistance, internal resistance of a cell. Thermo-electricity—Applications of thermo-dynamics to a thermo-couple—Thermo-electric-diagrams —Peltier and Thomson effects and e. m. f. of a couple.

Electro-magnetic Induction.—Coefficients of induction. Measurement of mutual inductance. Induction coils. Foucalt currents. Lenz's law—illustrations. Earth inductor—instantaneous value of induced e. m. f.

Electric lighting—Efficiency of lamps. Arc Lamps.

Elementary Study of Alternating Currents.—R. M. S. value of current. Cathode ray oscillograph. Relation between current and e. m. f. Impedance and reactance. Power Factor. Chocking coils and transformers. Alternating current generator. Transmission of power. Continuous current dynamos and motors.

Elementary study of wireless.—Oscillating circuit. Crystal and valve detector. Valve amplifier.

Applications of Electricity.—Telegraphy, telephony, microphone, and loud speaker.

Electrostatics.

Electrification by friction and induction. Gold-leaf electroscope. Force between charges. Inverse square law. Gauss' theorem. Potential of a charged sphere. Electric field—for a charged sphere, a charged infinite cylinder and conducting plane. Cavendish's proof of the inverse square law. Coulomb's law. Mechanical force on charged conductors. Lines of force. Energy of charged conductors and condensers. Electric capacity—spherical and parallel plate condensers. Dielectric constant. Induction machines—Kelvin's water dropper. Wimshurst machine. Electrometers—absolute and quadrant electrometers. Electric images.

Geometrical Optics.

Reflection and Refraction—Optical lever, sextant. Critical angle —air cell.

Thin lenses: combination of two thin lenses.—Liquid lens. Refraction through prisms—minimum deviation. Spherical aberration.

Dispersion.—Dispersive power; irrationality of dispersion; chromatic aberration; achromatic combination of prisms and lenses in contact. Direct vision and constant deviation spectroscope.

Optical instruments.—Photographic camera. Telescopes—reflector, refractor. Compound microscope. Eye-pieces; Ramsden's, Huyghens'.

Photometry—Bunsen's and Lummer Brodhun's photometers.

Physical Optics.

Velocity of Light.—Romer, Bradley, Fizeau and Foucault.

Wave theory.—Huyghens' principle. Explanation of straight line propagation. Explanation of reflexion, refraction and total reflexion. Action of mirrors and lenses reviewed from wave theory.

Interference—Young's experiment. Fresnel's biprism and bimirror—displacement of fringes by a thin transparent lamina. Colours by reflection at and transmission through thin films. Newton's rings. Test of plane surfaces.

Diffraction—Elementary theory of diffraction at a straight edge, narrow wire and narrow rectangular slit; resolving power of telescope. Plane transmission grating—dispersive and resolving powers. Zone plate—comparison with lens.

Polarization and double refraction—Polarization by reflexion, pile of plates—Brewster's law. Double refraction through calcite and quartz. Huyghens' theory of double refraction—construction of wave surfaces in three standard cases. Nicol's prism. Elliptic and circular polarization—how produced and detected—quarter wave plate, half wave plate. Rotation of plane of polarization—Fresnel's explanation—Polarimeters. Spectrum analysis—emission and absorption-spectra—Doppler's principle and application. Simple study of infra red and ultra-violet regions.

Atomic Physics.

Elementary charged particles.—The electron; cathode rays, thermionic an photoelectric emissions; determination of e/m by crossed magnetic and electro-static fields; Millikan's method for absolute determination of e. Positive rays; Thomson's method for determination of e/m: Aston's mass spectrograph. Isotopes.

Structure of the Atom.—Rutherford's nuclear theory of the atom. General conception of quantum theory. Elementary account of Bohr's theory of the Hydrogen atom and atomic spectra. Balmer's and allied Hydrogen series. Conception of electron shells and the periodic table of elements.

Structure of the nucleus.—Radio-activity. Artificial disintegration of nuclei. Protons, neutrons, positrons.

X-rays.—Production by gas tube and Coolidge tube. General properties. Diffrcation by crystals. Bragg's law. X-ray spectrometer. Characteristic X-rays and their origin.

Molecular spectra.—Elementary study of Raman effect.

Wave nature of matter—only qualitative study.—Equivalence of mass and energy. De Broglio's conception of matter—waves. Diffraction of electrons.

Sound.

Equation for a simple harmonic wave. Progressive and stationary waves—analytical expression. Speed of sound in a gas; Laplace's correction. Effect of pressure, temperature and humidity on the velocity of sound in a gas. Reflection and refraction of sound—effect of wind. Doppler's principle. Interference of sound waves—beats—analytical expression. Speed of transverse waves along a cord—laws of transverse vibrations; Melde's experiment. Speed of Sound in a solid rod—Kundt's experiment and applications. Vibration of gas columns; organ pipes; manometric flames—nodes and antinodes. Free vibrations—forced vibrations—resonance. Resonators—Helmholtz's resonators. Diffraction of sound waves—analogy with diffraction of light. Quality of sound. Vowel sounds. Musical scales

and mean scale temperament. Acoustics of buildings—simple ideas. Measurement of wave length, velocity and frequency. Electrically maintained tuning forks. Musical instruments and the gramophone.

A practical examination will be held to test the candidate's acquaintance with phenomena and his ability to show them, as well as his ability to make physical measurements. At the practical examination candidates must submit to the Examiner or Examiners their laboratory note-books duly certified by their Professors or Lecturers as a *bona fide* record of work done by the candidates.

LIST OF EXPERIMENTS FORMING THE COURSE IN PRACTICAL PHYSICS FOR THE B.SC. (PHYSICS MAIN) DEGREE.

A.—Properties of matter—

1. The balance—Sensibility and correction for buoyancy. 2. Simple Pendulum—Correction for moment of inertia of bob. 3. Compound bar pendulum—K. and G. 4. Young's Modulus by stretching. 5. Young's Modulus by bending. 6. Rigidity by static torsion. 7. Rigidity by torsional oscillation. 8. Rigidity by Maxwell's Needle. 9. Moment of Inertia—the torsion pendulum. 10. Surface tension by capillary rise. 11. Surface tension by pull on a plate. 12. Surface tension by weight of drops. 13. Surface tension at water oil interface by weight of drops. 14. Viscosity by flow of a liquid in a capillary tube.

B.—Heat—

15. Co-efficient of linear expansion. 16. Co-efficient of expansion of liquid by pyknometer, and by balancing columns. 17. Co-efficient of pressure of air at constant volume. 18. Co-efficient of expansion of air at constant pressure. 19. Specific heat of a solid. 20. Specific heat of a liquid using known solid. 21. Latent heat of ice. 22. Latent heat of steam. 23. Specific heat of a liquid by cooling. 24. Cooling curve—emissivity. 25. Thermal conductivity—Searles' apparatus. 26. Thermal conductivity of a bad conductor—Lee's apparatus. 27. Mechanical equivalent of heat—Friction Cones and Callendar's apparatus.

C.—Light—

28. Focal length of concave and convex mirrors. 29. Focal length of convex lens—auto-collimation. 30. Focal length of concave lens. 31. Refractive index of material convex lens. 32. Refractive index of concave lens. 33. Refractive index of a liquid by liquid lens. 34. Magnifying power of telescope and microscope. 35. The spectrometer—refractive index of solid prism by minimum deviation, and by total reflection. 36. The Spectrometer—refractive index of liquid by hollow prism. 37. The spectrometer—variation of angles of incidence and deviations (i-d curve). 38. The spectrometer—dispersive power of material of the prism. 39. The spectrometer—wave length of light by transmission grating at normal incidence—dispersive power of grating.

40. Newton's rings in reflected light—radius of curvature. 41. Wave length of light by bi-prism on optical bench. 42. The Polarimeter—rotation of plane of polarization. 43. Measurement of candle power by photometer.

D.—Sound—

44. Frequency by resonance column—end correction. 45. Volume resonator. 46. Frequency by falling plate. 47. Kundt's tube. 48. The Sonometer. 49. Melde's experiment.

E.—Magnetism—

50. Verification of Inverse Square Law by Gauss's method. 51. Determination of M. and H. 52. Measurement of dip by the dipcircle.

F.—Electricity—

53. Resistance by Post Office box—specific resistance of material. 54. Conductivity of electrolyte. 55. Absolute measurement of current by tangent galvanometer—voltameters. 56. E.M.F.'s by potentiometer. 57. Currents by potentiometer; ammeter calibration. 58. Resistance by potentiometer. 59. Internal resistance of cell by potentiometer. 60. Standardization of potentiometer: voltmeter calibration. 61. Carey Foster's method of comparing nearly equal resistances. 62. Temperature co-efficient of resistance. 63. Comparison of low resistance by direct deflection. 64. Comparison of high resistances by direct deflection. 65. Calibration of galvanometer—current and voltage sensitivities. 66. Joule's Law. 67. Brake horse power of motor. 68. Resistance of galvanometer—half deflection method. 69. E.M.F. of thermo-couple by potentiometer. 70. Constant of a ballistic galvanometer by Hibbert's magnetic standard. 71. Comparison of E.M.F.'S and capacities by ballistic galvanometer. 72. Absolute measurement of a capacity. 73. Comparison of mutual inductances by ballistic galvanometer. 74. Absolute measurement of a mutual inductance. 75. H by Earth Inductor—Ballistic Galvanometer.

TEXT-BOOKS.

Books for Study :—

The same as for B.A. Main, with the addition of the following books :—

Saha and Srivatsava: Heat for Junior Students.

Books for reference.—

The same as for B.A. Main, with the addition of the following books :—

1. Hart: Introduction to Advanced Heat.
2. Draper: Heat and Thermo-dynamics.

3. Houstoun: Treatise on Light.
4. Champion and Davy: Properties of Matter, (Blackie & Son).
5. Barton: Light.

Physics—Main.

(Revised Syllabus)

The following alterations and additions will take effect from the examination of March 1930:—

THEORY.

Statics. Omit "Ballistic pendulum and simple cases of dynamics of strings."

Properties of Matter.—Omit "Explanation of viscosity of gases on the kinetic theory" and *after* "comparison of viscosities" *add* "viscous resistance to motion—Stokes formula—Applications."

Heat: After "molecular speed and absolute temperature of a gas" *add* "explanation of the viscosity of gases on the kinetic theory."

Current Electricity. After 'continuous current dynamos and motors' *add* 'Rectifiers and simple circuits for rectifying A.C.—Copper oxide, Tungar: Valve, and mercury arc rectifiers.'

PRACTICAL COURSE.

Omit (8) n by Maxwell's needle and *add* in their appropriate places the following and renumber:—

(1) Surface tension mercury—Quinck's drop method.

(2) Magnetic curve of iron by magnetometer method—hysterisis loop.

(3) Self inductance in absolute units.

(4) Calibration of ballistic galvanometer—Mutual inductance standard.

Physics—Subsidiary.

The same as for B.A.—Physics—Subsidiary.

Mechanical Engineering and Electrical Engineering as Subsidiary to be taken with Physics as Main.

The same as for B.A.—Subsidiary.

(iv) Chemistry—Main.

(*Note.*—The following syllabus will be in force for the examination of 1949 only).

(a) *Chemistry—General and Historical* :—

The Atomic Theory; Valency. Methods of determining equivalent, atomic and molecular weights. Atomic Numbers. Isotopes. Properties of gases. Transition phenomena from the gaseous to the liquid state. Properties of solutions; osmotic pressure; vapour pressure and freezing and boiling points. Velocity of reactions and the Law of Mass Action. Phase Rule. Theories of the colloidal state. Theory of electrolytic dissociation. Transport numbers. Conductivity and Electro-motive force. Thermo-chemistry. Relation of physical properties to chemical constitution.

(b) *Inorganic Chemistry* :—

The descriptive portion of Inorganic Chemistry will include the elements and their compounds studied from the standpoint of the Periodic Classification omitting the detailed study of rare metals and their compounds.

(c) *Organic Chemistry* :—

Historical development of the science. Methods of purification and the criteria of purity of organic compounds. Analysis of organic compounds. Calculation of empirical and molecular formulae. Constitutional formulae. Isomerism and Polymerism.

Paraffins; halogen substitution products. Alcohols. Alkylesters of inorganic acids. Ethers. Aldehydes and ketones, and their derivatives. Fatty acids; their esters, chlorides, amides and anhydrides. Fats, oils, soaps. Olefines and acetylenes. Unsaturated alcohols, aldehydes, ketones and acids. Amines. Urea and Urethanes. Cyanogen compounds. Organometallic derivatives. Glycol and Glycerol and their derivatives. Dibasic acids of the Oxalic series. Hydroxy-monobasic and polybasic acids. Stereoisomerism of carbon compounds. Diketones and ketonic acids and esters. Amino-acids and polypeptides. Sugars, starches and celluloses. Polymethylenes.

Benzene and its homologues. Chloro-, nitro-, amino-, and sulphonic derivatives of aromatic hydro-carbons. Phenols. Azoxy, Azo-, and Hydrazo compounds-Diazobodies and their reactions. Benzyl alcohol, Benzaldehyde, Benzoic acid and their derivatives. Acetophenone and Benzophenone and their derivatives. Polysubstitution products, e.g., di- and triphenols, poly-carboxylic acids, hydroxy-aldehydes, hydroxy-ketones, hydroxy-acids, etc.

Laws of orientation of aromatic substitution products. Dephenyl methane, Phenyl ethylene, Diphenyl ethylene and their derivatives. Triphenyl methane, phthaleins and rosanilines. Naphthalene, Anthracene and Phenanthrene and their cheif derivatives.

(d) *Practical Chemistry:—*

(1) Qualitative analysis, including analysis of mixtures, and of mineral substances.

(2) Quantitative analysis, including (a) the estimation of alkalis, alkaline carbonates, and acids by neutralization (b) determinations involving the use of the permanganate, dichromate, iodine and thiosulphate processes, (c) the estimation of chlorides and cyanides by titration with silver nitrate, and also with thiocyanate, (d) gravimetric determinations of iron, calcium, copper, silver, lead, sulphuric acid, hydrochloric acid, phosphoric acid.

Candidates at examinations will be required to be able to standardize the solutions for volumetric analysis.

(3) The determination of molecular weights.

(4) Preparation of organic substances illustrative of such simple processes as halogenation, nitration, esterification, hydrolysis, oxidation, reduction, diazotisation, and condensation.

(5) Identification by chemical and physical tests of such simple organic substances as the following:—

Methyl and Ethyl alcohols; acetone; chloroform; Formic, acetic, oxalic, tartaric, citric, benzoic and phthalic acids; ethyl acetate and ethyl benzoate; urea, glucose benzene and toluene, aniline, phenol, resorcinol, pyrogallol, benzaldehyde, acetophenone, naphthalene and naphthols.

Books for Study:—

The same as for B.A. Main, with the addition of the following:—

Mellor's Modern Inorganic Chemistry, Revised and re-written by Parkes, (Longmans, Green & Co.), (1939).

Beginner's Qualitative Analysis by P.S. Lakshminarayanan.

Introduction to Physical Chemistry by A. Finlay (Longmans).

Reference: Physical Chemistry by A. Mee.

For Practical:—

Dey and Raman: Laboratory Manual of Organic Chemistry—Part, I, (G. S. Press, Madras).

Chemistry—Main.

REVISED SYLLABUS

(NOTE.—The revised syllabus will take effect from the Examination of March 1950.)

General: The contributions of a selected number of chemists to be announced from year to year.

The contributions of the following Chemists are prescribed for 1950 :—

Scheele, Lavoisier, Liebig, Berzelius, Gay-Lussac, and Van't Hoff.

Physical Chemistry:

Radioactivity and atomic structure, Atomic numbers. Isotopes (elementary treatment without involving separations), Kinetic theory and the gas laws. Equations of state. Critical phenomena. Methods of liquefaction of gases with special reference to liquefaction of air, hydrogen and helium. Properties of liquids: vapour pressure, viscosity, surface tension, parachor. Properties of solutions; osmotic pressure, and the gas laws, depression of freezing point, elevation of boiling point, and lowering of vapour pressure. Methods of determining molecular weights in solution. Physical properties: Molecular volume, Refractivity, Optical rotation. Magnetic rotation, Spectroscopy with reference to absorption spectra. Properties of solids which should include a very elementary study of crystal forms. Law of Mass action and its application to homogeneous and heterogeneous systems. Velocity and order of reaction. Arrhenius hypothesis of activation. Phase rule: statement and explanation. One component and two component systems. First law of thermo-dynamics: Thermo-chemistry. Second law of thermo-dynamics (no derivation of the law or expressions involving it). Ionic theory. Velocity of ions, Transport numbers, Conductivity, Dilution law, and qualitative behaviour of strong electrolytes. Electromotive force: Origin of E.M.F., Single electrode potentials, Concentration cells, Solubility of sparingly soluble salts, Hydrogen ion concentration and the methods of determination of the same. Hydrolysis of salts. Solubility product. Ionic product for water. Catalysis, Absorption. Colloidal State.

Inorganic Chemistry:

In addition to the portions covered by the Intermediate syllabus a study of the following is expected :—

Forms of hydrogen; purification of water. Ozone and hydrogen peroxide. Per-acids and per-salts. Oxides and oxyacids of halogen and their constitution. Manufacture

of sulphuric acid. Constitution of sulphuric and sulphurous acids. Oxyacids of sulphur other than sulphuric and sulphurous acids. Nitrogen industry. Hyponitrous acid and its constitution. Nitramide. Hydroxylamine, Hydrazine, and Hydrazoic acid. Nitrogen halides. Phosphorus and its manufacture. Hydrides of phosphorus. Halides and oxyhalides of phosphorus. Phosphonium compounds. Constitution of the Oxys-acids of phosphorus. Arsenic, Antimony and Bismuth, a comparative study. Bismuth hydride and Bismuthates. Hydrides of silicon and boron. Perborates. Silicates (constitution to be omitted).

Carbon: Gaseous fuels such as producer gas, water gas, and blast furnace gas. Carbides of silicon and calcium. Carbon bisulphide. Percarbonates.

Metals: Ore dressing. Furnaces (non-technical treatment). In addition to the metals included in the Intermediate syllabus metallurgy of Strontium, Barium, Gold, Nickel, Cobalt, Titanium, Tungsten, Molybdenum and Platinum. Binary non-ferrous alloys. Werner's Co-ordination compounds.

Organic:

Scope of Organic Chemistry. Purification of organic compounds with special reference to the principles involved in fractional distillation, steam distillation and extraction with solvents. Qualitative detection and quantitative estimation of the elements carbon, hydrogen, nitrogen, halogens, and sulphur. Empirical, molecular and structural formulae. Valency of carbon with special reference to electronic theory. Isomerism, metamerism, polymerism. Classification of carbon compounds. Chemistry of the paraffin hydrocarbons relating to their occurrence, preparation, syntheses, properties and uses studied up to hexane. Alcohols: Wood distillation and recovery of methyl alcohol from pyroligneous acid, synthetic methanol; Ethyl alcohol; manufacture by fermentative processes. Rectification of alcohol. Absolute alcohol by azeotrophic distillation, Alcoholometry. General properties of monohydric alcohols. Higher alcohols up to amyl alcohol.

Halogen substituted hydrocarbons: derivatives of the hydrocarbons mentioned above; alkyl halides, their preparation and reactions: Dihalogen and polyhalogen substituted derivatives of methane and ethane: esters of sulphurous, sulphuric, nitric and nitrous acids. Nitro-paraffins. Ethers. Thioalcohols. Oxidation products of alcohols. Aldehydes and ketones. Fatty acids (up to the five carbon atoms) and their derivatives such as acid chlorides, acid anhydrides, acid amides, nitriles and esters. Physical and chemical constants of fats and oils. Amines: classification, preparation, Properties and distinguishing tests. Quaternary salts. Cyanogen, cyanides, isocyanides. Cyanic acid, Isocyanic, cyanuric acids. Urea

and its constitution. Thiocyanates, Isothiocyanates. Thiourea. Derivatives of carbonic acid. Organometallic compounds of zinc and magnesium, and their synthetic uses.

Unsaturated hydrocarbons: Ethylene and acetylene and their derivatives. Role of ethylene and acetylene in the organic chemical industry. Unsaturated compounds of ethylene series: Vinyl and allyl derivatives. Allyl alcohol, Acrolein, Crotonic aldehyde. Acrylic acid. Crotonic, Isocrotonic and Vinyl acetic acids. Geometric isomerism. Unsaturated compounds of acetylene series: Propargyl alcohol, aldehyde and propiolic acid. Polyhydric alcohols: Glycol, and Glycerol. Dibasic acids: Methods of preparation, and reactions with reference to oxalic, malonic, succinic, glutaric and adipic acid. Synthetic applications of ethyl malonate. Hydroxy aldehydes and acids: Glycollic and glyceric aldehydes. Glycollic, malic, tartaric and citric acids. Stereoisomerism. Optical activity and resolution of racemic compounds. Dialdehydes and Diketones: Glyoxal, Succindialdehyde. Diacetyl, Acetylacetone and Acetonyl acetone. Pyruvic acid, Acetoacetic acid and its ester. Halogen substituted fatty acids up to butyric acid. Maleic and fumaric acids and their oxidation products. Citraconic and Mesaconic acids.

Aliphatic amino acids (alpha). Polypeptides. Reactions of proteins. Carbohydrates. Classification and general reactions. Glucose and Fructose. Structure of glucose. Cane-sugar, Maltose and Lactose. Elementary treatment of starch and cellulose. Cycloparaffins: methods of synthesis and their properties. Stability of ring systems. Diazomethane.

Aromatic: Distillation of coal. Coal tar as a raw material of benzenoid compounds. Isolation of benzene, toluene and the zylenes. Synthetic methods of preparation of homologues of benzene and properties. Structure of benzene, Laws of aromatic substitution. Halogenated, nitrated and sulphonated derivatives of benzene and toluene. Aniline and the toluidines. Diazotisation of aromatic amines. Constitution and reactions of aromatic diazo-compounds. Mono and disubstituted aniline. Phenyl hydrazine. Diphenyl amine. Reduction products of Nitrobenzene: Phenylhydroxylamine, Azo, Azoxy, and Hydrazobenzene: Benzidine transformation. Nitranilines and Diamines.

Phenols: Monohydric, Dihydric and Trihydric; preparation and reactions. Aromatic alcohols: Benzyl alcohol and Cinnamyl alcohol. Benzaldehyde, Benzoin, Benzil and Benzilic acid. Cinnamic aldehyde. Acetophenone and Benzophenone. Beckmann rearrangement. Benzoic acid and Benzene dicarboxylic acids. Salicylaldehyde, para-Hydroxy benzaldehyde, Vanillin. Salicylic acid, para-Hydroxy benzoic acid, Mandelic acid. Cinnamic acid and its stereochemistry. Diphenyl and Triphenyl methanes. Diphenyl, Phenyl ethylene and Diphenyl ethylene. Azo Dyes: Methyl orange, Amino-azo benzene,

Orange II, Chrysoidin. Congo-red, Methyl-red. Triphenyl methane colouring matters: Malachite Green, Rosaniline, and Crystal Violet, Phthaleins: Phenolphthalein, Fluorescein, Eosin. Vat dyes: Indigo (elementary treatment, constitution not expected). Condensed ring systems: Naphthalene (constitution), Nitro-naphthalenes, Naphthylamines, Chloro-naphthalenes, alpha and beta sulphonic acids, Naphthols, Naphthaquinones. Anthracene: Nitration and sulphonation, Anthraquinone and Alzarin. Phenanthrene: Phenanthro-quinone.

Pyrrol, Pyridine, Quinoline and Isoquinoline (elementary treatment). Simple alkaloids, their isolation, reactions and synthesis with reference to Coniine, Piperine and Nicotine.

***Practical*:**

Qualitative: Analysis of mixtures containing not more than four radicals, among which should be included interfering radicals such as oxalate, tartrate, Fluoride, Silicate, Phosphate, Arsenate, Chromate (combination of phosphate, and Arsenate, silicate and fluoride: Chromate, tartrate and oxalate to be avoided).

***Gravimetric*:**

Estimation of the following metallic radicals: Silver as chloride, Lead as sulphate, Barium as sulphate, Zinc as oxide, Magnesium as pyrophosphate, Tin as oxide, Calcium as carbonate (separations not expected). Estimation of lead and tin in solder; Analysis of gunmetal, Copper volumetrically and tin gravimetrically. Estimation of sulphuric, hydrochloric and phosphoric acids.

***Volumetric*:**

Acidimetry and alkalimetry: Standardisation of acids by sodium carbonate, and borax and of alkalies using oxalic and succinic acids. Estimation of boric acid in borax. Estimation of Barium. Indirect estimation of ammonia to be avoided. *Permanganimetry*: Standardisation of permanganate using oxalic acid and Mohr's salt. Estimation of persulphate, iron in ferric alum, nitrite, calcium, lead. Evaluation of pyrolusite and lead peroxide. *Dichrometry*: Standardisation of dichromate against Mohr's salt. Estimation of iron in ferric alum using stannous chloride and external indicator. Evaluation of iron ore. Iron in filings using mercuric chloride. Chromium in chromium sulphate by oxidation with persulphate. Estimation of potassium chlorate.

***Iodimetry*:**

Standardisation of sodium thiosulphate against (1) Permanganate, (2) Dichromate and (3) pure copper. Estimation of copper

in copper coin. Standard iodine solution, purity of arsenic trioxide. Estimation of barium precipitating as chromate, dissolving in hydrochloric acid and reducing with acidified potassium iodide.

Precipitation methods :

Standard silver nitrate, using (1) pure sodium chloride, (2) ammonium thiocyanate. Estimation of chlorine in Barium chloride. Use of Mohr's indicator and Ferric alum indicator. Analysis of silver coin. Estimation of mercury, using standard thiocyanate.

Physical Chemistry :

The student's record book should show evidence of his having performed the following experiments *but these experiments are not to be prescribed for the practical examinations.*

Molecular weights by the cryoscopic and ebullioscopic methods. Viscosity measurements. Transition temperature (thermometric method). Partition co-efficient of iodine between water and benzene, oxalic acid between amyl alcohol and water. Critical solution temperature of phenol and water. Velocity of reactions: (1) Saponification of ester by acid and alkali, (2) Order of reaction of potassium persulphate with respect to potassium iodide.

Organic :

Identification of simple organic substances by systematic tests. The student is expected to report only on one functional group. If substances containing more than one functional group be chosen they should be limited to the following types : Salicylic acid, halogen acids, nitro acids, nitranilines and nitro-phenols. Preparations involving simple processes such as nitration, acylation, hydrolysis and simple condensations.

There will be a two-day practical examination of six hours' duration on each day. The inorganic qualitative and quantitative should be commenced on the first day. Candidates are expected to do both gravimetric and volumetric exercises. The volumetric part and the qualitative part should be submitted on the first day. The gravimetric may be continued on the second day along with the organic. Organic exercises should consist of one preparation so as to test the manipulative skill of candidates and characterisation of one simple organic compound. The results of the gravimetric exercise and the organic part should be submitted at the close of the second day.

Chemistry—Subsidiary.

The same as for B.A. Subsidiary, with the addition of the following :—

Subsidiary Chemistry—Part I—Physical Chemistry, by Lakshminarasimhan and Subramanian. (S. Viswanathan, No. 2/10, Post Office Street, G. T., Madras).

(v) Botany—Main.

(*Note* :—The following syllabus will be in force for the examination of 1949 only).

1. The main points of structure, development, life-history and taxonomic relation of the following groups in general and the genera in particular :—

Bacteria.

Cyanophyceae—Gleocapsa, Oscillaria, Nostoc and Rivularia.

Chlorophyceae—Chlamydamonas. Pandorina, Eudorina, Pleodorina, Volvox, Ulothrix, Oedogonium, Enteromorpha, Coleochete, Cladophora, Vaucheria, Caulerpa, Botrydium, Spirogyra, Zygnema, Desmids, Nitella and Diatoms.

Phaeophyceae—Ectocarpus, Sargassum and Dictyota.

Rhodophyceae—Batrachospermum, Polysiphonia and Gracillaria.

Phycomycetes—Phytophthora, Albugo, Mucor and Pilobolus.

Ascomycetes—Pyronema, Erysyphe, Peziza and Saccharomyces.

Basidiomycetes—Ustilago, Puccinia, Agaricus and Polyporus.

Lichens.

Bryophytes—Riccia, Marchantia, Anthoceros and Funaria.

Pteridophytes—Selaginella, Lycopodium, Isoetes. Gleichenia, Lastrea and Marsilia.

Gymnosperms—Cycas and Pinus.

2. The external morphology of flowering plants.

3. The general principles of classification and the distinguishing characteristics of the following Families as given in the Flora of British India :—

Ranunculaceae.	Asclepiadaceae.
Magnoliaceae.	Boraginaceae.
Anonaceae.	Bignoniaceae.
Nympheaceae.	Convolvulaceae.
Malvaceae.	Solanaceae.
Sterculiaceae.	Scrophulariaceae.
Tiliaceae.	Acanthaceae.
Geraniaceae.	Labiatae.
Rutaceae.	Verbinaceae

Meliaceae.	Amarantaceae.
Ampelideae.	Chenopodiaceae.
Anacardiaceae.	Loranthaceae.
Papilionaceae.	Euphorbiaceae.
Caesalpiniaceae.	Urticaceae.
Mimoseae.	Piperaceae.
Rosaceae.	Orchidaceae.
Combretaceae.	Scitamineae.
Myrtaceae.	Amaryllideae.
Lythraceae.	Liliaceae.
Cucurbitaceae.	Commelinaceae.
Umbelliferae.	Hydrocharitaceae.
Rubiaceae.	Palmae.
Compositae.	Araceae.
Sapotaceae.	Cyperaceae.
Apocynaceae.	Gramineae.

4. Plant Physiology :—The chemical composition of the plant; material of plant food and their sources; the nature of the soil and the importance of its constituents and the micro-organisms in the soil; maintenance of soil fertility in cultivated soils; fallows; rotation of crops. Movements of water and gases. Assimilation of carbon and nitrogen. Transpiration. Translocation of assimilated products. Metabolism. Parasitism and other special modes of nutrition. Respiration. The influence of light, heat and gravity. Growth, movements and irritability in plants. Adaptation to environment. Sexual reproduction and its significance. Vegetative reproduction.

5. Histology :—The structure and modes of division of the cell and nature of its contents. The nature and mode of origin of plastids, cell-sap and other cell contents. The physical and chemical properties of protoplasm and cell-wall. The origin, nature and development of plant tissues. Primary and secondary tissues and their distribution in the plant body.

6. Economic Botany :—A study in general of : 1. the cereals, pulses and oil-seeds of South India; 2. fibres, timbers, spices and fruits with particular reference to such as occur in the families prescribed. The important crop plants of India and their distribution; study in detail of the following crop plants; Paddy, Cholam, Sugarcane, Cotton and Groundnut.

7. Elements of Genetics and Plant Breeding :—Evolution and origin of species; Mendelism and principles of heredity; plant breeding; improvement of crops; the chromosome theory of heredity.

8. Practical Work :—Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the Groups or Orders mentioned in the syllabus and to describe them with

sketches sufficient for their identification ; to make dissections with the simple microscope of the floral parts of Phanerogams, and to make drawings, construct floral diagrams and refer them to their Natural Orders ; to describe in technical language plants belonging to any of the Orders or Groups specified in the syllabus, and to have done field work under tuition for at least five days in each year.

At the practical examination each candidate must submit his laboratory note-books and a collection of named plants collected and preserved by himself.

Botany—Main.

Revised Syllabus.

[Note.—*The revised syllabus will take effect from the examination of March 1950*].

1. The main points of structure, development, life-history and taxonomic relation of the following groups in general and the genera in particular :—

Thallophyta :

Algae—Chlorophyceae :

Chlamydamonas, Pandorina, Eudorina, Pleodorina, Volvox, Ulothrix, Enteromorpha, Cladophora.

Coleochete, Oedogonium, Zygnema, Desmids, Caulerpa, Vaucheria.

Diatoms.

Chara and *Nitella.*

Botrydium.

Cyanophyceae :

Rivularia, Gleocapsa, Oscillatoria and *Nostoc.*

Phæophyceæ :

Ectocarpus, Sargassum, Dictyota.

Rhodophyceæ :

Batrachospermum, Polysiphonia, Gracillaria.

Bacteria :

One form of bacterial disease of plants to be studied in detail (potato Ring disease or citrus canker).

Virus :

General account of virus diseases in plants including one type in detail, *e.g. Tobacco mosaic virus.*

Fungi—Phycomycetes :
Phytophthora, Albugo, Saprolegnia, Pythium.

Ascomycetes :
Saccharomyces, Aspergillus, Penicillium, Pyronema, Erysiphe, Xylaria, Peziza.

Basidiomycetes :
Ustilago, Puccinia, Agaricus, Lycoperdon, Polyporus.

Fungi Imperfecti :
Fusarium, Alternaria.

Lichens :
Parmelia.

Bryophyta :
Riccia, Marchantia, Anthoceros, Funaria.

Pteridophytā :
Lycopodium, Selaginella, Equisetum, Ophioglossum, Isoetes. Gleichenia, Marsilia.

Gymnosperms :
Cycas, Pinus, Gnetum.

II. The Morphology and Systematics of the following families :—

Angiosperms :

Ranunculaceae, Magnoliaceae, Nympheaceae, Sterculiaceae, Tiliaceae, Geraniaceae, Meliaceae, Anacardiaceae. Rosaceae, Myrtaceae, Cucurbitaceae, Umbelliferae, Rubiaceae, Compositae, Apocynaceae, Asclepiadaceae, Convolvulaceae, Scrophulariaceae, Acanthaceae, Amaranthaceae, Urticaceae, Orchidaceae, Liliaceae, Araceae, Scitamineae, Cyperaceae and Gramineae.

III. *Physiology :*

The chemical composition of the plant. Material of plant food and their sources—Absorption of water—Root pressure—Absorption of ions—Sand culture experiments with special reference to use of inorganic nutrient salts in plant growth—Soil microflora with reference to Nitrogen fixation. Maintenance of soil fertility in cultivated soil—Rotation of crops.

Transpiration—Laws of diffusion, Movements of stomata, wilting and its significance. Movement of water, solutes and gases. Cohesion-theory.

Assimilation of carbon—External and internal factors. Law of limiting factors. Leibig's law of minimum.

Simple theories connected with the mechanism of photo-synthesis.

Assimilation of Nitrogen—Carbon/Nitrogen Ratio and its significance—Special methods of obtaining nitrogen.

Translocation of assimilated products—Enzymes and their action.

Respiration—Energy relations of the plant. Factors affecting respiration. Aerobic and anaerobic respirations and their inter-relationships—Respiratory quotient.

Growth, movement and irritability in plants.

IV. *Histology*:

The structure and modes of division of the cell—Mitosis, Amitosis, Meiosis. The nature and mode of origin of plastids, cell sap and other cell contents. The physical and chemical properties of Protoplasm. The cell wall—its composition. Modification of cell wall.

Meristem—location, kinds of — properties. Primary and secondary tissues and their distribution in the plant body.

Root— stem transition and different types of anomalous secondary growth in thickness.

V. *Economic Botany*:

A detailed study of the following economic plants including botany of the plant, cultural methods and meteorological conditions; Paddy, Cotton, Sugarcane, Coconut, *sesamum* and *Musa*.

VI. *Ecology*:

Factors of plant habitat—soil-water, soil-air.
Units of vegetation: Plant Succession, Migration and Ecesis. Types of vegetation—Mangrove, coastal, scrub and evergreen.

Characteristic features of Hydrophytes (submerged, floating and immersed types): Mesophytes (with reference to stomatal-frequency); Xerophytes (types of Xeric environment). Physical and physiological drought.

VII. *General Principles*:

A. Mendelism with special reference to mono-and dihybrid ratios—Chromosome theory of heredity.

B. Mutations and the factors that bring them about—Origin of species and the theories of evolution.

C. Plant breeding—Improvement of crops.

Practical Work.

Candidates are expected to be able to make preparations illustrating the form and structure of any plant of the groups or orders mentioned in the syllabus and to describe them with sketches sufficient for their identification; to prepare permanent slides with double staining; to make dissections with the simple microscope of the floral parts of Phanerogams and to make drawings, construct floral diagrams, and refer them to their natural orders; to describe in technical language plants belonging to any of the orders or groups specified in the syllabus and to have done field work under tuition for at least five days each year. Candidates are required to submit at the practical examination their laboratory note books, a dozen of their microscopic preparations and a collection of about hundred plants with field notes and floral diagrams.

Books for Study:

B.A. AND B.Sc. DEGREE EXAMINATIONS.

1. Text-book of Botany by J. M. Lowson, W. O. Howarth and G. G. Warne.
2. Plant Physiology by O. Raber.
3. Introduction to Systematic Botany by A. W. Haupt.
4. Cryoptogamic Botany by G. M. Smith.
5. Economic Botany by A. F. Hill.
6. Plant Physiology by Maximov.
7. Introduction to Plant Anatomy by Eames.
8. Plant Ecology by Weaver and Clements.
9. Genetics by Walter.
10. Structural Botany by Scott, Vols. I and II.
11. Elements of Plant Pathology by I. E. Melhus and G. C. Kent.
12. Flora of Madras by Gamble.
13. Classification of Flowering Plants by Rendle (for B.Sc.)

Botany—Subsidiary.

The same as for B.A. Subsidiary.

(vi) Zoology—Main.

Theory.

I. *Invertebrata.*—The leading features in the structure, the development, the affinities and the classification of the following groups:—

Protozoa—Porifera—Coelenterata — Platyhelminthes—Nemertini—Nematoda—Acanthocephala—Chaetognatha —Rotifera — Branchiopoda —Annelida — Phoronidea — Polyzoa — Arthropoda — Mollusca and Echinodermata.

II. *Chordata.*—The structure and the development of the vertebrate systems to be treated from an evolutionary standpoint as illustrated by representative types such as Amphioxus, Shark, Teleost, Dipnoan, Frog, Lizard, Bird and Rabbit. A study of the primitive chordates as illustrated by Sea squirt and Balanoglossus will be expected.

An outline classification of the vertebrata and a general acquaintance with the vertebrate fauna of South India.

III. *Vertebrate Embryology.*—Elements of vertebrate embryology based on a study of the Frog, Chick and the Rabbit.

IV. Outlines of the theories of organic evolution and heredity. Principles of geographical distribution.

Practical.

Candidates will be required to identify and describe specimens and preparations illustrating points of zoological interest in connection with any of the groups mentioned above. They will also be required to make dissections and simple microsopic preparations of any of the following types :—

Amoeba ; Paramoecium ; Vorticella ; Hydra ; Earthworm ; Leech; Prawn and Crab (external characters) ; Scorpion ; Centipede ; Cockroach ; Fresh-water Mussel ; Ampullaria (Pila) ; Sepia ; Starfish ; Amphioxus (preparations and sections) ; Shark ; Frog ; Calotes ; Pigeon and Hare. Candidates may also be required to identify and draw slides of developing chick. (Dissection of the nerves in the Vertebrate types will not be required except in the case of the Shark, Frog and the Rat).

At the practical examination, the candidates must submit their laboratory note-books.

Zoology—Subsidiary.

The same as for B.A.Subsidiary.

(vii) Geology—Main.

(NOTE : The following Syllabus will be in force till the Examination of 1949. From the Examination of March 1950 the Syllabus will be the same as the revised Syllabus For B.A.)

I. Physiography.
II. Mineralogy and Crystallography.
III. Petrology.
IV. Structural and Field Geology.
V. Stratigraphy and Palaeontology.

(i) *Physiography.*

An elementary course of lectures on the following :—

The earth as a planet, its general relations to other members of the solar system, hypotheses as to the origin of the earth : form, size and density of the earth ; its movements and their effects.

The Atmosphere—its composition, height, density, pressure, temperature, moisture and movements; weather, refraction, twilight, and aurora-borealis.

The Hydrosphere—its composition, extent and distribution. depth, temperature and movements.

The Lithosphere—the chief constituents of the earth's crust, the general characters and mode of occurrence of igneous and sedimentary rocks. Condition of the interior of the earth.

Agents of geological change.—The hypogene and epigene agents of geological change, manner, and results of their action, especially as influencing earth-sculpture—the destruction, construction and gradual evolution of the crust of the earth and of its surface features.

Fossils, the main conditions favourable for their formation and preservation and their value as interpreters of the past history of the earth.

Climates—their causes and distribution ; glacial epochs.

Simple facts about the geographical and geological distribution of the chief types of plant and animal life. Antiquity of man. Views as to the age of the earth's crust.

(ii) *Mineralogy and Crystallography.*

Symmetry ; lines, planes and axes of symmetry; laws of Crystallography ; the common holohedral, hemihedral and hemimorphic crystal forms and combinations under each of the six crystal systems; thirty-two types of crystal symmetry ; the more important types of twins and twinning ; grouping and irregularities of crystals, parting planes, percussion figures, etched figures ; zonal characters, drawing of the more important crystal forms ; systems of crystal notation, use of the contact and the reflecting Goniometer.

The principal physical properties of minerals which aid in the recognition of the various mineral species.

Isomorphism, paramorphism, pseudomorphism and dimorphism.

The chief characteristics of all the more abundant minerals including both those which are of geological interest and those of commercial value, the more important metallic ores, their modes of occurrence and uses, with special reference to India.

The practical determination of the chief physical and chemical properties of the commoner ores and minerals including the use of the blowpipe.

(iii) *Petrology.*

The classification and distribution of rocks, and the composition, structure, texture, origin and mode of occurrence of all the more important types and their metamorphic and altered forms.

Contact and Regional Metamorphism.

The macroscopic and microscopic examination of rocks including the determination of the simpler optical characters of the chief rock forming minerals in parallel polarized light. Preparation of diagrams or sketches to represent features observed in rock sections under the microscope. Construction and use of a simple petrological microscope. Mechanical separation of rock-constituents, determination of the nature and history of rocks by means of the microscope.

(iv) *Structural and Field Geology.*

The more important lithological and structural features of rocks, their origin or formation; structure of mineral veins. Diagrammatic sketches of the above.

Construction and interpretation of geological maps and sections Tracing of outcrops. Simple problems in Structural Geology.

(v) *Stratigraphy and Palaeontology.*

The Chief petrological and palaeontological characters of the main geological divisions and the probable physical conditions under which they were formed. Geology of India.

Fossils, their nature and preservation. The main groups of vegetable and animal life and their distribution in time.

The characters, classification and distribution of the more important types of fossils—especially Indian; identification and sketching of fossils; causes for the imperfection of the geological record; the general succession of life as revealed thereby and the general evidence furnished in support of evolution; principles of correlation; Homotaxis.

(vi) *Practical Examination.*

The knowledge of the candidate in accordance with the syllabus will be tested also by practical examination. *Viva voce* questions may be asked: some acquaintance with field work is necessary.

Books for study—The same as for B.A.

Geology—Subsidiary.

The same as for B.A. Subsidiary.

Principles of Surveying, Preliminary Prospecting, Ore Dressing and Assaying.

(Only as a Subsidiary Subject with Geology as Main Subject).

Land and Mine Surveying—

Schedule for Lectures.	*Schedule.* *Lecture hours.*	*Field-work hours.*
1. Introduction—Objects and general principles.	1	...
2. Use of chains and tapes—types and errors. ...	1	...
3. Chain surveying—field work booking, etc. ...	2	3

4. Surveying with Prismatic Compass, errors; booking calculation and plotting	2	3
5. Plane table surveying—setting out methods ...	2	3
6. Levelling—adjustments—field book, reduction —common errors; plotting	3	4
Contouring	1	2
Earthwork calculation—volume and area ...	2	1
7. Theodolite Survey—description, manipulation, adjustment—traverse	4	3
Curves	2	1
Simple triangulation	2	1
Stadia measurements	2	2
8. Miner's dial—types, errors; adjustments, booking, plotting	2	2

(The field-work periods will be of $2\frac{1}{2}$ to 3 hours' duration; may in the morning or afternoon).

Prospecting.

General considerations. Importance of sampling, testing and grading of minerals, sampling, prospecting and estimation of reserves; economics of veins and quarry management aided by visits to mines and quarries.

Methods:

1. Pit, shaft and trench sinking.
2. Bull-dozing.
3. Bore-hole drilling—Drilling methods—Auger drill, churn drills, core-drills.
4. Geophysical methods and their principles: magnetic, electrical, electromagnetic gravitative, seismic and radiometric.
5. Principles of aerial prospecting.

Ore Dressing and Assaying:

1. Introduction—Smelter schedules—General Flow sheets.
2. Laboratory Sizing—Sizing (Sieves)—Subsieve sizing (Stoke's Law)—Newton's Law—Hydrometer method—Sedimentation Balance—Centrifuging—Microscope.
3. Crushers—Jaw Crushers—Gyratory crushers—Cone crushers—Rolls—Stamps.
4. Liberation—Size Reduction—Liberation by detachment—Behaviour of Locked particles—Determining Degree of Liberation.
5. Grinding—Modern equipment—Theory and operating details—Practice.
6. Comminution—Shape—Cleavage and Crystalline Size, Present —Crushing and Grinding efficiency.
7. Classification—Introduction—Free settling—Hydraulic Classification—Hindered Settling Classification—Mechanical Classification.
8. Industrial Screening—Screening Surfaces—Theory—Types of Screens—Capacities—Efficiencies of screening.
9. Quantifying concentration operation—Direct statement—Ratio of Concentration—Recovery—Rejection Losses—Selective Index.
10. Gravity Concentration—Jigging—Tabling.
11. Flotation—History and General—Theory, Flotation circuits.

12. Cyanidation—General and Theory—Testing—Plant circulations.
13. Filtration and Drying—Laboratory testing: Theory—Equipment—Efficiencies.
14. Thickening—Determination of settling rate—Computation of thickener size—Types.
15. Magnetic and Electrostatic separation.

Laboratory Work :

A. Semi-micro Procedures with reference to Aluminium, Barium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese and Rare earth elements.
B. Ore microscopy—Determination of common ore minerals.
C. Fine grinding tests.
D. Flotation of fluorspar, sulphide ores.
E. Magnetic separation.
F. Elutriation.
G. Determination of the fineness of gold from a watch chain.
H. Determination of silver in a silver coin.
I. Complete analysis of (i) Iron Ore. (ii) Chrome Iron Ore, Copper ore and Bauxite.

Anthropology.

(As Subsidiary Subject only to Botany, Zoology or Geology).

The same as for B.A.

(viii) Physiology—Main.

The scope of Physiology. The cell and its parts and their significance. Histology of the tissues and organs of the body. The elementary constituents of protoplasm. The physical chemistry of the cell including diffusion, osmosis, surface action, properties of crystalloids and colloids, and permeability. Enzymes and their mode of action.

Muscle and nerve :—Properties of Muscle—effects of loading and fatigue on contraction—iso-metric contraction—artificial methods of excitation—chemical, thermal and electrical changes during contraction. Properties of plain muscle. The nerve-impulse—changes in nerve fibres during transmission of impulse—conditions affecting the excitability of nerve—polarisation phenomena in nerve—degeneration and regeneration of nerve fibres.

Central nervous system :—Functions of nerve-cells—reflex action—structure and functions of the spinal cord, brain stem, cerebellum and cerebrum—cerebral localisation of motor and sensory areas.

Conditioned reflexes. Composition, formation and functions of the cerebro-spinal fluid. The autonomic nervous system.

Sense Organs :—The eye as an optical instrument—dioptrics of the eye—pupil reflex—mechanism of accommodation—optical defects—properties of the retina—visual sensations—colour vision and contrast—binocular vision—use of the ophthalmoscope and perimeter. Auditory sensations—central connections of the auditory nerve. Functions of the vestibule and the semi-circular canals. Sensations of taste and smell. Cutaneous sensations and their end-organs.

Production of voice.

Circulation :—Physiological anatomy of the heart—the heart-beat—its origin—properties of cardiac muscle—the cardiac cycle—electro-

cardiogram—output of the heart—nutrition of the heart—regulation of the heart-beat. General features and course of the circulation of blood pressure—velocity of blood—pulse—capillary and venous blood flow—vasomotor machanism—influence of exercise on circulation.

Blood :—General properties of blood—origin, life history and functions of the elements formed—haemoglobin and its chemistry—composition of plasma—coagulation—reaction of blood—volume of blood—formation, circulation and functions of lymph.

Spleen :—The structure and functions.

Respiration—Mechanics of respiratory movements—blood gases and their transport—exchange of gases in the lungs and the tissues—oxidation in the tissues—estimation of total respiratory exchange—composition of expired air and alveolar air—chemical and nervous regulation of respiration—external factors influencing respiration.

Nutrition—Chemistry of the common food substances—secretion and properties of the digestive juices and bile—movements of the stomach and intestines—absorption of food. Total exchange of the body. Metabolism of proteins, fats and carbohydrates—nitrogen balance—basal metabolism—factors influencing metabolism—heat energy of foods—dietetics—vitamins.

BODY TEMPERATURE AND ITS REGULATION.

Excretion—Composition and secretion of urine—micturition.

Skin and its functions.

Endocrine Organs :—Their structure and function—the mutual interaction of hormones.

Reproduction :—The formation of germ-cells—Hormonic influences in the development of the reproductive organs—the oestrous cycle—menstruation—ovulation—fertilisation—pregnancy—parturition—lactation.

Practical Biochemistry :—Properties and reactions of carbo-hydrates, proteins and fats—quantitative estimation of sugars—qualitative tests on some foods, *viz.*, milk, rice, bread, eggs, meat. Properties of the digestive juices and detection of the enzymes—qualitative tests of blood and urine—quantitative estimation of total nitrogen, urea, phosphates and chlorides in urine. Gas analysis and blood-gas analysis.

Practical Histology :—Histology of tissues and organs—common methods of staining.

Candidates may be required to identify microscopic preparations of tissues and organs.

Experimental Physiology .—Acquaintance with the apparatus employed and methods adopted for the demonstration of the fundamental physiological processes. Experiments on frog's muscle-nerve preparation and heart to demonstrate properties of skeletal and cardiac muscle and nerve-fibres—contraction of plain muscle, effect of vagal stimulation of frog's heart—perfusion of isolated frog's heart. Finding the specific gravity, viscosity, and coagulation time of blood—enumeration of blood corpuscles—estimation of haemoglobin and colour index. Record of respiratory movements and vital capacity of man. Record of blood-pressure and pulse in man. The spinal frog and the decerebrated frog.

Books for study:—

1. Howell: Text-book of Physiology (Saunders Co.)
2. Starling: Principles of Human Physiology.
3. Harris: Experimental Physiology (Churchill).
4. Schaefer: Experimental Physiology (Longmans).
5. Cannon: Laboratory Course in Physiology (Harvard Uni. Press).
6. Bremer: Text-book of Histology (Blackiston).
7. Schaefer: The Essentials of Histology (Longmans).
8. A. T. Cameron: Text-book of Biochemistry (Churchill).
9. S. W. Cole: Practical Physiological Chemistry (Heffer).
10. Folin: Laboratory Manual of Biological Chemistry (Appleton).

Books for reference:—

1. C. L. Evans: Recent Advances in Physiology (Churchill).
2. Pryde: Recent Advances in Biochemistry (Churchill).
3. Samson Wright: Applied Physiology (Oxford Medical Publications).
4. Bodansky: Introduction to Physiological Chemistry (Wiley).
5. Mathews: Physiological Chemistry (Wen-Wood).
6. Wissart: Groundwork of Bio-Physics (Bell).
7. Bainbridge: The Physiology of Muscular Exercise (Longmans).
8. Bayless: Principles of General Physiology (Longmans).
9. Maximow and Bloom: Text-book of Histology.
10. Barcroft: The Respiratory function of the blood II—Haemoglobin (Cambridge).
11. Cushny: The Secretion of the Urine (Longmans).
12. Haldane, J. S.: Respiration (Yale University).
13. Cameron: Recent Advances in Endocrinology (Churchill).
14. Sobotta-Piersol—Human Histology and Microscopic Anatomy. Vols. I and II (G. E. Stechert & Co., New York).
15. Lusk: The Science of Nutrition (Saunders).
16. Cannon: The Wisdom of the Body (Norton & Co.).
17. Marshall: The Physiology of Reproduction.

Physiology—Subsidiary.

The same as for B.A. Subsidiary.

(ix) Home Science.

I. ECONOMICS.

(a) HOUSEHOLD ECONOMICS.

Scope:—

Household Economics as comprising the general business aspects of both House-keeping and Home-making. The science and art of planned family living: a complex study. Relation to other studies like Biology, Chemistry, Mathematics, Economics, Sociology, Art, etc. The family, its importance in individual and social life. Functions of the family.

Human Wants:—

Character of wants. Efforts and satisfactions. Relative urgency of different wants; necessities, comforts and luxuries. Principle of substitution of wants. Law of Diminishing Utility. Wealth and welfare.

Standard of Life :—

Constituents of standard of life. Different standards. Importance of standard of life. Standard of life and wages. Means of raising the standard. The Indian standard of life. Rural and urban standards.

Production in the Home :—

The old and self-sufficing home. The extreme modern apartment Hotel. The average home both in the East and West. Growing dependence of the home on organised industry. Tendency for production in the home to be superseded by consumption.

Labour in the Home :—

The house-wife, chief labourer. The share of the husband and the children. Domestic servants. Labour-saving appliances. The organised household. Leisure and its value. Women's activities outside the home.

Household Income and Expenditure :—

Money income and real income. Supplementary family income. Subsidiary family occupations—spinning, weaving, kitchen gardening, poultry keeping, dairying, etc. Husband as chief wage-earner. Women and children as wage-earners.

Schedule of anticipated income and its allotment between various expenditures. The family budget, its main items. Principle of equimarginal satisfactions. Family budget studies. Engel's laws. Financial records of the household. The cash book. Other records. Household credit and debt.

Capital and Savings :—Need for saving. Temporary savings and permanent savings. Institutions for small and big savings. The Savings Bank, Post Office Savings Bank, indigenous institutions for saving like the Chit Fund, Nidhi, etc. Current and Deposit Banking Accounts. The cheque and its use. Money lenders, borrowing, interest and usury. Investments—shares and stocks, real property, life insurance. Different types of policies. Jewels and their importance in Indian life.

Economics of Household Purchases :—

Wholesale and retail purchase. The retail shop. Piecemeal purchase and purchase for the month. The Co-operative Store and its importance. Itinerant vendors, hawkers, pedlars, etc. Proper weights and measures. Laws regarding adulteration of food-stuffs. Cash purchase and Credit purchase. Different articles of consumption and where they come from. Tariffs and their effects on prices.

Money :—

Money, its nature and functions. Different types of money. Indian currency. Relative values of different currencies. Price level and value of money.

Women and Civic Responsibilities :—

Local authorities, Municipalities, District Boards, Panchayats; their duties. Public Utilities, like supply of light, water, conveyances, telephone, post and telegraph services, etc. Women and local administration.

Income and expenditure of public authorities. National and local taxes. Main Indian taxes.

Books recommended.—

Andrews: Economics of the Household.

R. D. Richards: Groundwork of Economics.

Jathar & Beri: Elementary Principles of Economics.

(b) RURAL ECONOMICS.

Theory.

Introduction.—

Historical survey of agriculture in general. Evolution of modern agriculture. Changes in modes of consumption and their effect on methods of cultivation. Dominant types of agriculture—individual, communal, co-operative, and capitalistic. Commercial and subsistence agriculture.

Agriculture Proper.—

Factors of production, land, labour and capital. Law of diminishing returns. Farm equipment, seeds and manure. Fragmentation and sub-division of land. Irrigation facilities. Agricultural finance. Means of communication and methods of transport. Exchange and marketing of produce. Agricultural prices. Distribution of agricultural incomes. Agricultural wages. Standard of living. Unemployment, under-employment and pressure of population on land. Migration. Land tenures. Taxation of land. Different types of agricultural taxation. Incidence of agricultural taxes.

The Indian Village.—

Characteristics of the village. Main village problems. Diseases and epidemics. Maternity and infant mortality. Illiteracy. General ignorance and apathy. Lack of leadership.

Rural Reconstruction.—

(a) *Economic Aspect.*—Supplementing agricultural incomes by rural industries. Dairying, poultry-breeding, bee-keeping and sericulture. Other handicrafts. Agricultural demonstration and propaganda. Cattle breeding centres, better seeds and manure. More grazing facilities. Agricultural co-operation of all types.

(b) *Social Aspect.*—Improvement of rural health and physique. Hygiene. Rural welfare centres. Better rural doctors, nurses and midwives. Rural education and rural recreation. Broadcasting and

cinema. Village panchayats. Place of voluntary organisations in rural welfare work.

Famines and Famine Relief :—

Brief review of Indian famines. Famine codes.

The work of the Agricultural Department.

Practical.

1. Visits to nearby villages and study of conditions on the spot.

2. The detailed study of any one practical scheme of rural reconstruction, like the Gurgaon experiment, the Marthandam scheme, etc.

3. Planning a model village.

Books recommended.—

Carver : Principles of Rural Economics.
Row : Primer of Agricultural Economics.
Brayne : Better Villages.
A. P. Pillay : Welfare Problems in Rural India.
Keating: Rural Economy in Bombay, Deccan.
Report of the Royal Commission on Agriculture.

(c) SOCIAL ECONOMICS.

Theory.

Nature of Social Economics. Scope of Social Economics. Relation to General Economics. Criteria of economic welfare.

National income and its distribution. Causes of inequality of income. Private property. The bases of private property.

The poverty line. Investigations into poverty. British investigations of Booth, Rowntree, Bowley, and Llewllyn Smith. Social studies in India regarding poverty and other economic conditions. Population and poverty. Over-population and under-population. Emigration. Minimum of subsistence. Standard of life. Family budgets.

Women's work and wages. Equal pay for equal work. Women in industry. Causes for low rates of wages for women. Cottage industries and women.

Minimum wage. The sweating system. The principal sweated industries of India. Wages regulation in other countries. Trade Board Acts. National minimum wage. Principles of minimum wage legislation. Minimum wage for India.

State and the worker. Factory legislation. Legislation regarding mines. Social insurance. Accident, unemployment and health insurance. Maternity benefits. Old age pensions. Family endowment schemes.

Trade unionism. History of trade unionism in India. The wage system. Payment by results. Profit-sharing and co-partnership. Industrial unrest. Strikes and lock outs. Collective bargaining. Conciliation and arbitration. Role of state in settlement of industrial disputes.

Unemployment and under-employment: causes and remedies. The problem of the casual labourer.

Charity and poor law. Private and public aid. Problem of dependents and defectives. A poor law for India.

Housing and industrial workers. Slums and cheries. Town planning and housing schemes.

Welfare work in industry. Statutory welfare work and voluntary welfare work.

The worker and the co-operative movement.

Socialism and its implications.

Practical.

1. Intensive study of the family budgets of a small group of people, as for example, the servants of an institution, the inhabitants of a cheri nearby.

2. Visits to factories, and the study of welfare work in any one factory, like the Buckingham and Carnatic Mills.

Books recommended.—

Silverman : Economics of Social Problems.
Parmalee : Poverty and Social Progress.
Slater : Poverty and the State.
Report of the Royal Commission on Labour.
Bowley and Hogg : Has poverty diminished ?

II. BACTERIOLOGY AND HYGIENE.

HYGIENE.

Municipal and General Hygiene :—Water supplies including the sources of such supplies, the detection of pollution and purification and storage.

Sanitary appliances.

Sewage disposal and the disposal of refuse in town and country—Conservancy system.

Housing.

Air and Ventilation—Heating and Lighting.
Disinfection.

Vital statistics.

General principles of public health administration—Fairs and festivals ; markets : village sanitation ; rural water supply ; Public Health authorities : climate and meteorology.

Personal Hygiene :—Hygienic life and habits; the care of teeth, cleanliness, clothing, etc., exercise; food; food poisoning and diseases spread by food; adulteration of food-stuffs and methods of control.

Domestic Hygiene :—Filters, storage of food, planning of houses, furniture. etc.

School Hygiene :—School buildings, medical inspection of school children; school clinics; the more important diseases—common to school age.

Infectious Diseases and their Prevention :—Nature of infection and its method of spread. Notifiable diseases and the duties of Public Health staff. Epidemics and the detection of their origin. Methods of controlling and preventing infection—such as notification, isolation, quarantine, disinfection and immunisation. The main points which should receive attention in the detection and prevention of the commoner forms of infectious diseases—e.g. cholera, plague, small-pox, chicken-pox, dysentery, diarrhoea, typhoid, typhus, dengue, measles, whooping cough, malaria, diphtheria, tuberculosis, rabies, leprosy, peurperal fever and venereal diseases.

Parasites :—Cestodes, nematodes, trematodes in particular tape worm, round worm, hook worm, thread worm, guinea worm and filaria. Life history, mode of infection, prevention and treatment.

Maternity and Infant Welfare Work :— Schemes of infant welfare work in towns, and rural areas. Infant mortality and its chief causes; maternal mortality and its chief causes; the place of infant welfare centres, maternity homes, maternity hospitals and the duties of health visitors. Antenatal hygiene—its importance and general lines of work; infant hygiene, breast feeding—human milk and cow's milk—their composition, raw, pasteurised and dried milk, methods of artificial feeding. Disorders of nutrition and minor ailments including rickets, scurvy, malnutrition and summer diarrhoea.

First aid, common poisons and their antidotes. Equipment of a first aid Medicine Chest.

Excursions :—Inspections and demonstrations illustrative of the chief points in the lectures, including visits to factories, workshops, sewage works, water works, cleansing and disinfecting stations, infectious diseases hospital, maternity and child welfare centres.

BACTERIOLOGY.

The general morphology, structure, biology and classification of bacteria.

Yeasts and moulds—their examination; isolation and cultivation.

Apparatus—Incubators, sterilisers, petre dishes, etc.

Preparation and sterilisation of culture media.

Bacteria in water, and the pollution and purification of water.

Bacteriology of sewage.

Filtration of water and water filter.

Bacteria in milk and other foods.

The causation of infectious diseases from the Bacteriological point of view (viruses and protozoal infections).

Practical work will consist of lecture demonstrations and four excursions to a well-equipped Bacteriology Laboratory.

Note.—The syllabus for B.Sc. will deal more exhaustively with the subjects mentioned with particular reference to laboratory technic.

III. PHYSIOLOGY.

Theory.

Introductory Principles.—

Structure and properties of protoplasm.

Structure of the cell.

Organization of cells.

Physiology of cells:

Metabolism.

Movements of materials through cells.

Cell division.

Evolution of reproductive processes.

Human Physiology.—

Histology of the tissues of the body.

Digestion.—Nature and action of digestive juices and bile. Movements of alimentary tract. Absorption.

Essential facts of protein, carbohydrate and fat metabolism.

Respiration.—The respiratory mechanism. Volumes of air breathed. Gaseous exchange in the lungs and tissues. Carriage of gases in the blood. Composition of expired and alveolar air. Regulation of respiration. Asphyxia.

Blood.—Composition and functions. Blood Cells. Haemoglobin. Coagulation. Haemolysis. Blood forming organs. Factors in blood formation. Chemistry of blood.

Circulation.—Structure of heart. Cardiac cycle. Properties of cardiac muscle. Innervation and regulation of heart-beat. Flow of blood. Velocity. Pulse. Vasomotor control. Physiology of capillaries.

Lymph.—Formation, circulation and functions.

Excretion.—Composition and secretion of urine.

Skin.—Structure and functions.

Body temperature and its regulation.

Endocrine organs.—An elementary knowledge of the functions of the adrenal glands, pituitary, thyroid.

Neuro-muscular system.—Structure and properties of muscle. Physical and chemical changes during contraction. Fatigue. Structure and functions of nerve fibres. The general structure of the central nervous system. Reflex action. The mechanism of voluntary movements and their co-ordination. Joints. The structure and physiology of the sense organs.

Reproduction.—The ovary. Development of Graafian follicle. Ovulation. Menstruation. Fertilization. Implantation. Pregnancy. Foetal membranes. Parturition. Mammary glands and lactation. Male reproductive organs. Internal secretions of the sex glands. Endocrine control of sex and reproduction.

Practical.

Demonstrations of cells, movements of materials through cells, cell division.

Tissues—demonstrations of connective tissue, bone, muscle, nerve, kidney, epithelium of digestive and respiratory tract, skin, blood vessels mammalian ovary.

Salivary digestion.

Respiratory volumes.

Graphic record of respiration.

Blood cells ; coagulation of blood ; estimation of haemoglobin and method of blood count.

Circulation in the frog's web or tongue.

Heart-beat in the frog.

Human pulse and factors affecting it.

Blood pressure determination.

Tests of circulatory efficiency.

Urine analysis : specific gravity, qualitative tests: reaction, sugar, protein, Phosphate.

24 hour urine volume, specific gravity, reaction, total nitrogen.

Nerve-muscle—preparation in the frog with graphic records.

Study of spinal frog—reflex actions.

Human reflexes.

Demonstration of pregnant mammal and foetuses.

IV. NUTRITION.

(*Note :—For the examination of 1949 only).*

Theory.

Methods of differentiating well nourished and poorly nourished groups.

Energy requirements of the body.

The calorie.

Factors influencing energy requirement.

Basal requirement and total requirement. Methods of measurement.

Energy value of foods.

Methods of measurement.

Physiological values.

Specific dynamic action.

Protein requirement.

Functions of protein.

Comparative value of various proteins.

Sources of protein and factors affecting its availability.

Protein intake. Nitrogen balance. Significance of nitrogenous constituents of urine. Minimum requirement and accepted standards of protein intake. Provision for protein under local conditions and within limited incomes.

Ash requirements.

Their functions; effects of deficiency.

Sources and availability.

Requirements.

Water balance.

Vitamins.

Discovery, methods of identification.

Relation to health.

Sources.

Effects of storage, commercial preparation and cooking on food values.

Hygiene of the digestive tract.

Co-efficients of digestibility.

Relation of nature of food to elimination of waste.

Factors influencing constipation.

Planning of an adequate diet.

Dietary habits in South India.

Adequate diets for limited incomes.

Invalid diets.

Practical.

Weights and measures in South India. Comparison with other weights and measures.

Water as a solvent.

Losses of food values through various methods of preparations: soaking, heating with water to different degrees through short and long periods.

Experiments with tea, coffee, vegetables, fruits, meat or fish, flour.

Heat.

Comparison of temperatures and their effects in different methods of cooking: dry heating, steaming, simmering, boiling, sand-and-charcoal-baking.

Experiments with milk, sugar, various kinds of flour, meat or fish, eggs.

Leavening agents.

Effect of various leavening agents in preparation of foods, toddy, yeast, soda, baking-powder.

Milk.

Souring and curdling; methods of freezing milk.

Fats and oils.

Comparison of different oils (and ghee) for use in applying heat to food: deep fat frying and shallow fat frying at different temperatures.

Experiments with meat or fish, potatoes, flour preparations.

Food analysis.

Estimation of protein, fat, ash and water content of: fish, milk, rice.

Basal metabolism determinations and comparison with prediction standards.

Estimation of individual total energy requirement.

Dietary study.

Calculation from food analysis tables of total calories, protein, fat, carbohydrate, mineral and vitamin content in local diet. Preparation of exhibits demonstrating food values and methods of serving food attractively.

Planning of adequate diets under local conditions for pregnancy, lactation, infancy, childhood, for the family, on varied incomes.

Institutional dietetics: planning, purchasing and preparation of food for institutions such as school cottages, hostels (including school lunches for day pupils), hospitals. Excursions to study the diets of various institutions.

Animal feeding experiments with different qualities and quantities of protein.

Human balance experiments on different protein levels with urine analyses.

Animal experiments demonstrating effects of vitamin deficiency.

Note.—It is expected that throughout the course constant application will be made to local conditions.

V. APPLIED PHYSICAL SCIENCE.

N.B.—*The Syllabus is to be regarded as extensive rather than intensive in scope.*

CHEMISTRY.

Inorganic Chemistry :—

The study of the following metals and their alloys with special reference to arts and industries. (Aluminium, Copper, Gold, Iron, Lead, Mercury, Calcium, Nickel, Platinum, Silver, Tin and Zinc).

Catalysis and its applications.

Elementary notion of colloids and ionisation.

Organic Chemistry :—

Isolation and analysis of organic compounds.

Aliphatic Series—Preparation and properties of Methane, Ethane, Ethylene, Acetylene, Ethyl Chloride, Chloroform, Iodoform, Methyl alcohol, Ethyl alcohol, Ether, Acetaldehyde, Acetone, Acetic acid (vinegar), Acetylchloride, Ethyl Acetate, Acetamide, Acetic anhydride, common fats and oils, soaps, Ethyl Amine, Oxalic acid, Lactic acid, Tartaric acid, Citric acid, Glycerine, Nitroglycerine, Dynamite, Urea, Glucose, Fructose, Cane Sugar, Lactose, Maltose, Starch, Cellulose, Celluloid, Gun-cotton.

Aromatic series : Preparation and properties of Benzene, Toluene, Nitro-benzene, Aniline, Phenol, Benzyl alcohol, Benzaldehyde, Benzoic acid, Naphthalene.

Water for laundry purposes, Laundry blue, glazing and stiffening materials, Dry methods of cleaning.

Chemical and microscopical characteristics of animal, vegetable, artificial and mineral fibres.

Dyeing and bleaching.

Elementary knowledge of leather and tanning.

Paints, varnishes, polishes, inks.

Glass, enamels and ceramics.

Fuels.

Practical Chemistry.

Qualitative analysis of inorganic substances containing not more than one acid and one base from the following list. :—

Silver, Lead, Mercury, Copper, Tin, Aluminium, Iron, Zinc, Calcium, Ammonium.

Hydrochloric, Hydrobromic, Hydriodic, Nitric, Carbonic and Sulphuric acids and Hydrogen Sulphide.

Volumetric analysis :—Estimation involving simple applications of alkalimetry and acidimetry.

The detection of the following elements :—Carbon, Hydrogen, Nitrogen, Sulphur and Halogens in an organic compound.

Indentification of the following organic compounds :—Ethyl alcohol, Acetic acid, Oxalic acid, Acetone, Chloroform, Glucose, Urea, Phenol.

Preparation of Iodoform, Methyl Orange ; Preparation and hydrolysis of Ethyl acetate.

Extraction of one or two essential oils from natural sources.

Preparation of soap.

Cleansing action of soap solution at various concentrations and temperatures.

Action of heat, acids, alkalis and salts on textiles.

Indentification of the common bleaching agents.

Removal of stains.

Direct dyeing and the use of mordant dyes.

Effects of different water supplies, acids, alkalies and neutral and alkaline salts on metals used for cooking utensils.

PHYSICS.

The course in Physics included in Home Science is intended to be of a general and popular nature.

Properties of Matter :—

Physical quantities, their units and measurement.

Uniform circular motion—centrifugal and centripetal force—Applications to centrifuges, engine governors, cream separators, dyeing clothes, etc.

Simple machines—the balance, the weighing machine.

Friction—sliding and rolling.

Viscosity.

Diffusion and osmosis.

Vacuum pumps and gauges ; compression pumps.

Liquids in motion; city water supply ; loss of heat due to viscosity in pipes—Hydrants, faucets, gauges and meters ; turbines.

Heat.—

Thermometry—High and low temperature measurements.

Liquefaction of gases ; liquid air ; dry ice, its preparation.

Refrigerating machines and cold storage.

Humidity and air conditioning.

Conduction, convection and radiation of heat—Thermos flask, pressure cookers, fireless cookers, incubators.

Light :—

Intensity of illumination ; lighting of room ; foot candle meter.

Optical instruments—stereoscopic vision and the binoculars, microscope, telescope and magic lantern.

Photography ; movie camera, motion pictures.

Spectral character of light. Its relation to the Physiological and actinic properties.

Sound :—

Laws of vibrating strings ; harmonics ; resonance.

Common musical instruments—Violin, Veena, piano, flute, harmonium, organ pipes.

Principle of gramophone.

Electricity :—

Frictional electricity and its production—Lightning and thunder, protection devices.

Simple instruments for measurement of current, E.M.F. and resistance.

Electric power and Watt-hour meter—heating and lighting ; arc light, filament lamps, mercury arc, neon lighting.

Laws of electrolysis and applications—electroplating (Nickel, Silver, Gold and Chromium).

Elementary knowledge of Generators and Motors—A.C. and D.C. Applications—fans, vacuum cleaners, tram cars, automobiles.

Induction coils and transformers—microphone and telephone.

Fuses.

Cathode rays, X-rays and radio activity.

Elements of radio.

Practical Physics.

Properties of matter :—

Balance—curve of sensitiveness, weighing by method of Gauss.

Heat :—

Specific heat of solids, liquids with radiation correction (half time correction).

Latent heats.

Conductivity of good conductors.

Vapour density measurements.

Light :—

Photometry—comparing power of various lamps by different methods and calculating their efficiency and power consumed.

Electricity :—

Absolute determination of current.

Variation of resistance with temperature.

Comparison of resistance with potentiometer.

Calibration of ammeter by potentiometer.

Calibration of volt-meter by potentiometer.

Electro-chemical equivalent of copper.

Electrical determination of mechanical equivalent of heat.

In addition to the above list of routine experiments, the course should cover a few exercises on the following :—

Electro-plating.

General laboratory technique, such as, soldering, tinning of metalware, etc.

NUTRITION.

REVISED SYLLABUS.

(With effect from the examination of March 1950).

THEORY.

Standards for judging the state of nutrition of individuals and groups.

Energy requirements of the body:

Basal metabolism and factors affecting it.

Total requirements of the body and factors affecting them.

Energy values of foods:

Methods of measurements.

Physiological value.

Specific dynamic action of foods.

Protein:

Structure ; sources ; comparative study of the value and availability of different proteins. Digestion and metabolism. A study of protein requirement including nitrogen balance. Value and use of protein in the body in health and disease.

Carbohydrates and Fats:

Structure and sources.

Digestion, metabolism and functions in the body.

Place in diet.

Water:

Its use in the diet.

Water balance.

Mineral Elements in Nutrition:

Sources and availability. Functions and requirements. Relation to deficiency diseases. Acid-base balance.

Effect of cooking on mineral content of foods.

Vitamins:

History: isolation and identification.

Sources: requirements in health and disease.

Avitaminoses.

Effect of storage, exposure, heat on vitamin content of foods.

Planning of adequate diets with special relation to the Dietary Habits of South India:

A study of normal diets of different ages and at different economic levels especially for pregnancy, lactation, infancy and old age.

Menu planning for homes and schools.

Diets in Disease (Diet therapy):

(*A*) Fluid, soft, convalescent and post-operative diets.

(*B*) *Diseases essentially curative by diet:*

Avitaminoses, Anaemias, Food allergy and Dietetic hypothyroidism.

(*C*) *Diseases in which Diet is of great importance:*

(1) Diabetes.

(2) Diseases of the Digestive Tract as liver diseases: gastric and duodenal ulcers: diarrhœas, dysentery, cœliac diseases, constipation.

(3) Fevers acute and prolonged (Typhoid and tuberculosis).

(4) Obesity.

(*D*) *Diseases in which Diet is palliative only:*

Nephrosis, nephritis, high blood pressure.

Rheumatism and arthritis.

PRACTICAL.

I. Physical measurements of college students and school children and methods of analysing data.

II. *Basal metabolism:*

Use of calorimeter:

Determination of total daily requirements.

III. *Food chemistry and analysis.*

Tests for carbohydrates, proteins and fats. Their separation from foodstuffs and their identification.

Quantitative determination of sugars, starches and protein.

The iodine and saponification number and free-fatty acid value of fats.

Qualitative and quantitative determination of calcium, phosphorus and iron.

Quantitative determination of vitamin C and carotene.

Qualitative tests for vitamin A in foods.

Separation and identification of the constituents of milk: the fat soluble substances in egg yolk.

IV. *Animal experiments to illustrate deficiencies.*

V. *Dietary Studies*—Individual, home and group.

VI. *Experimental cooking :*

Experiments to determine the best ways of cooking vegetables, fruits, cereals, starches, sugars, dhals and gram, milk, eggs, cheese, tea and coffee.

Determination of acidity of fruit juice and alkali-acid ash determination. Pectin Tests.

A study of leavening agents.

VII. *Practical Cookery :*

Typical food preparations used in South India.
Practical demonstrations by the class of invalid foods and diets for disease.

VIII. *Preparation of Exhibits demonstrating food values and attractive methods of serving foods.*

Syllabus for Military Science—Certificate 'B'.

[NOTE.—*The subject may be offered by members of the Madras University Officers' Training Corps (1) instead of "Shakespeare" and "Modern Poetry" or as an additional subject under Part I of the B. A. Degree Examination ; or (2) as a Subsidiary Subject or as an additional Subsidiary Subject for the B.Sc. Degree Examination.*]

(See under Syllabuses for B.A. Degree.)

Text-books for the Examination of 1949.

PART I.

ENGLISH.

Prose Detailed :

1. Arnold—Selections. Ed. Campagnac, (Macmillan).
2. Longer Specimens of Modern English Prose, omitting *De Senectute* (O. U. P.)

Non-detailed:

1. Trollope—The Last Chronicle of Barset.
2. Modern Short Stories—Scholar's Library, (Macmillan).
3. J. S. Hoyland—Gopal Krishna Gokhale, (Y. M. C. A. Publishing House, Calcutta).

MARATHI.

Sanskriti Sangam by D. K. Kelkar.

HINDI.

1. Madhu Manjari (D. B. Hindi Prachar Sabha, Madras).
2. Bapu, by G. D. Birla.

FRENCH.

1. Victor Hugo: Ruy Blas.
2. Balzac: Pere Goriot (Heath).

ARABIC.

Prose and Poetry:

Majaniul-adab, Volume II.
Surah-i-Maryam.

Grammar, etc.:

Thatcher's Arabic Grammar *or* Asas-i-Arabi.

History of Arabic Literature:

Arabic Literature in the first two centuries of Islam.
Book recommended: History of Arabic Literature by H. A. R. Gibb.

PERSIAN.

Prose:

Siyahat Nameh-i-Ibrahim Beg—First 70 Pages (Calcutta Edition).
Intikhabi—Anwar-i-Suhayli, First and Second Chapters with Introduction by Ja'fari.

Poetry:

Pas-che Payad Kard by Iqbal.
Shahid-i-Nazm by Ja'fari.

History of Persian Literature:

Nineteenth Century Persian Literature by Levy.

URDU.

Prose :

Masamin-i-Farhat—Part I.

Bazmi—Akbar, Published by Anjuman.

Poetry :

Bang-i-Dira—Poems written after 1908.

Drama :

Pardah-i-Ghaflat.

Non-detailed :

Chand Ham'Asar.

Almamun by Shibli.

History of Literature :

Development of Prose after 1858.

Urdu Literature by Graham Bailey.

TAMIL.

1. Sanga Chintamani by Mr. V. Rajagopala Ayyangar, (Kambar Vilasam, Mylapore, Madras).
2. Akattiya Munivar by Kaviraja Pandit Jagavira Pandiyan, (Tiruvalluvar Nilayam, Mela Chitra Vidhi, Madura).
3. Tiruvalluvar Nul Nayam.
4. Manonmaniyam, Acts 3, 4 and 5.

TELUGU.

The detailed and non-detailed prose text-books prescribed for B.A., Part II for 1949, *Viz.*,

1. Essays in Telugu by Munimanikyam Narasimha Rao, Bhaskarapuram, Masulipatam.
2. Thyagamahima by Baladari Veeranarayana Deo, Rajahmundry.
3. Sāpam by Chilakamarti Lakshminarasimham, Tirupati Venkateswara Book Depot, Rajahmundry, *or* Vasumati Vasantam by Venkataparvateesakavulu.

KANNADA.

1. Visa Vriksha by B. Venkatachar.
2. Bettada Jeeva by K.S. Karanth.

MALAYALAM.

1. Sastravum Yuddhavum by M.R.Balakrishna Warriyar, R.T.Pilla & Sons, Chalai, Trivandrum.
2. Marthandavarma, by C.V.Raman Pillai, Kamalalaya Press Trivandrum.
3. Sahitya Nishkutam by P. Sankaran Nambiyar, Deccan Publishing House, Calicut.

Text-books for the Examination of 1950.

PART I.

ENGLISH.

Prose Detailed :

1. Carlyle—Selections from the French Revolution, Hemingway and Seymour (D.C. Heath & Co.).
2. Longer Specimens of Modern English Prose omitting *De Senectute* (O. U. P.).

Non-detailed :

1. Thackeray : Esmond.
2. M. R. Ridley : Abraham Lincoln (Blackie & Son).
3. Tagore : Home and the World (Macmillan).

MARATHI.

The same as for 1949.

HINDI.

The same as for 1949.

FRENCH.

V. Hugo : Ruy Blas.

Balzac : Pere Goriot. (Heath).

ARABIC, PERSIAN, AND URDU.

The same as for 1949.

TAMIL.

The same as for 1949.

TELUGU.

Detailed and Non-detailed prose texts prescribed for B.A. Part II 1950, *viz.*,

1. Essays in Telugu—Edited by Munimanikyam Narasimha Rao, published by Prabhat Book Depot, Gudivada.
2. Kalapurnodayam: Prose rendering by G. L. Narasimha Sastri and G. V. Krishna Rao, published by Jacobin Publishers, Tenali.

KANNADA.

The same as the texts under Non-detailed study prescribed for B.A. Part II, 1950. *viz.*,

1. Bettada Jeeva (K. S. Karanth, Puttur, S. K.).
2. Parna Kuti (Krishna Sarma, Siddavana Halli, Malleswaram, Bangalore).

MALAYALAM.

1. Adhunika Sastram by Bhaskaran Nayar, Professor, University College, Trivandrum.
2. Marthanda Varma by C. V. Raman Pillai, Kamalalaya Press, Trivandrum.
3. Sahityadarsam by T. K. Velu Pillai, Tampanur, Trivandrum.

Text-books for the Examination of 1951.

PART I.

ENGLISH.

Prose—Detailed:

1. Carlyle—Selections as for 1950.
2. Jepson—More Modern Essays (Longmans).

Non-detailed :

1. Hardy—Far from the Madding Crowd.
2. Sir Richard Livingstone—Some Tasks for Education (O. U. P.).
3. Sardar K. M. Panikkar—A Survey of Indian History. (The National Information and Publications, Ltd., Bombay).

MARATHI.

The same as for 1950.

HINDI.

The same as for 1950.

FRENCH.

The same as for 1950.

TAMIL.

The same as for B.A, Part II, 1951.

TELUGU.

The detailed and the non-detailed Prose text-books prescribed for B.A. Part II for 1951, *viz.*,

1. Saraswatavyasamulu by Korada Ramakrishnayya.
2. Kalabhashini by D. Venkataramana Sastri.

KANNADA.

The same as those prescribed under Non-detailed Study for the B. A. Degree Examination of 1951, under Part II, *viz.*,

1. Ananda Matha by B. Venkatachar.
2. Parna Kuti by S. Krishna Sarma.

MALAYALAM.

The same as for 1950.

APPENDIX VI.

B.Sc. (HONOURS) DEGREE EXAMINATION.

SYLLABUSES AND TEXT-BOOKS.

Branch I-A—Mathematics.

The following is the list of subjects from which special subjects are to be selected under each of the divisions specified in (c) under Part II—I-A Mathematics in Regulation 2 of Chapter L.

Note.—The Board of Studies may from time to time add to the list or exclude subjects from the list, either temporarily or permanently :—

Two of the following subjects at the option of the candidate :—

1. *Dynamics*—

   (1) Advanced Rigid Dynamics.

   (2) Theoretical Dynamics.

2. *Astronomy*—

   (1) Planetary and Lunar Theories.

   (2) Physical and Practical.

3. *The Potentials.*

4. *Electricity.*

5. *Hydrodynamics and Sound*—

   (1) Irrotational motion of liquids.

   (2) Propagation of sound in gases.

6. *Heat*—

   (1) Conduction of Heat.

   (2) Thermodynamics.

   (3) Kinetic Theory of Gases.

ASTRONOMY.

PLANETARY AND LUNAR THEORIES.

A. Dynamical Principles.—Lagrange's equations and the Lagrangian function. Hamilton's principle and the derivation of

the equations of dynamics by the variation of Hamilton's principal function. The ordinary Hamiltonian equations and the canonical equation of dynamics. The necessary and sufficient condition that a change of variables should leave the canonical form of the equations (in the new variables) unchanged. Hamilton's theorem that the principal function satisfics a partial differential equation when the constants of integration of the canonical equations are the initial values of the co-ordinates. The Hamilton-Jacobi partial differential equation and its relationship to the solution of the canonical equations.

B. *Newton's Law of Universal Gravitation and the problem of two particles.*—Kepler's Laws. Newton's deduction of the Law of Gravitation from Kepler's Laws. Possible forms of force in order that a particle may describe a conic section under the action of a central force. Bertrand's first theorem that the only laws of central force which are functions of the distance, under the action of which a particle will describe a conic are $f = \pm \frac{K^2}{r^2}$ and $f = \pm K^2r$. Bertrand's second theorem that the only laws expressible as functions of the distance whioh always give rise to closed orbits, whatever the initial circumstances may be (within a certain range) are $f = \pm \frac{K^2}{r^2}$ and $f = \pm K^2r$. Evidence of double star systems: Newton's Law of Gravitation universal.

Elliptic motion. The fundamental equations of elliptic motion. Bessel's functions and the relations between the functions of different order. The expansions of the radius vector, the eccentric anomaly; the true anomaly, etc., in terms of the eccentricity of the orbit. Convergence of these series.

C. *The problem of n bodies.—Planetary Theory.*—The potential of an attracting system and its relation to the force of attraction. The potential and attraction of a spherical shell at internal and external points. The potential and attraction of any heterogenous spherical body which is made up of concentric spherical shells of the same density. The potential of a body at a distant point. The motion of n heavenly bodies under the law of gravitation is practically the same as the motion of n massive attracting particles. The integrals of the equations of motion of n particles. Jacobi's equation establishing a necessary condition for the stability of the system. Radau's transformation of the form of kinetic energy and the angular momentum and the resultant form of the equations of motion. Heliocentric co-ordinates and the equations of motion in terms of them. The disturbing function. Advantages and disadvantages of either of the above two forms of the equations of motion. Solution of the equations $x\frac{(S+m)x}{r^3} = \frac{\partial R}{\partial x}$ by the method of the variation of parameters. Intermediate orbits, Lagrange's brackets and Poisson's brackets and their relationship to each other. The equations of motion expressed in terms of them and the six arbitrary constants of the solution of the equations where $R=0$. The Lagrange brackets do not contain the time explicitly. The equations of motion expressed in terms of the Lagrange brackets reduced to the canonical form when

the six arbitrary constants are the initial co-ordinates and velocities of the moving body. The expression of a Lagrange bracket in terms of the elements of the orbit.

The canonical elements and the canonical form of the equations of motion when these are used. Jacobi's method of solving the equations of elliptic motion by means of the partial differential equation. Jacobi's equations for disturbed elliptic motion. The canonical constants of Jacobi, Delaunay and Poincare. The expressions for the Lagrange brackets and the Poisson brackets containing the elements. The equations for the variation of the elements and the disturbing forces expressed in terms of the partial differential co-efficients of the disturbing function with respect to the element. Elementary proof for the equation for $\frac{da}{dt}$. The difference between secular inequalities and periodic inequalities. Examples of a resisting medium. Long period inequalities and short period inequalities. The inequalities of the Jupiter—Saturn system. The major axes and the mean motions of planets have no secular inequalities in the first approximation. The application of Radau's transformation and the resultant formulae to the proof of Poisson's theorem that the major axes of planets have no purely secular inequalities even in the second approximation. (The proof of Poisson's theorem is excluded).

D. The Lunar Theory.—The equations of the Sun relative to the centre of gravity of the Earth and the Moon. The motion of the Sun is practically elliptic. The equations of motion of the Moon relative to the earth. Form of the disturbing function. Jacobi's quasi-integral for the moon's motion (*i.e.*, under the assumption that the sun moves in a circle). Pontecoulant's equations of motion and their solution up to the second approximation. Variational inequalities. Elliptic inequalities. The Evection. The motion of Perigee. Mean period inequalities. The Annual equation. Parallactic inequalities. The latitude equation and the motion of the node. Hill's form of the equations of motion of the Moon. Reduction to one equation giving both the radius vector and the longitude to any desired degree of approximation. The variational curve. Differential equations for small displacements from the variational curve. Hill's equations for the normal displacement, viz., $\frac{d^2N}{dt^2} = \theta N$ applies to all inequalities independent of the eccentricity of the Sun's orbit. The infinite determinant. Motion of the perigee and the node. Outline of the method of finding the displacement of the Moon from the variational curve when the eccentricity of the Sun's orbit and the parallax are not neglected.

(a) *Books recommended for Study*:—

(1) E. W. Brown's Lunar Theory omitting Chapters IX, X and XIII and greatly restricting Chapter XI.

(2) H. C. Plummer's Dynamical Astronomy. Chapters I, II, IV, XII, XIII, XV, XX, and XXI greatly restricting the last two.

(3) Hill's Lunar Theory as given in Vol. V of Darwin's Scientific Papers.

(4) A Text-book of Astronomy by G. V. Ramachandran.

(b) *Books for Reference*:—

(1) F. R. Moulton's Introduction to Celestial Mechanics.
(2) Cheyne's Planetary Theory (out of print).
(3) J. C. Adam's Lectures on the Lunar Theory (out of print).
(4) Dziobek's Mathematical Theories of Planetary Motions.
(5) Poincare's Lecons de Mecanique Celeste Tomes I and II.
(6) Tisserand's Traite de Mecanique Celeste Tomes I and II.

CONDUCTION OF HEAT.

General differential equation for isotropic bodies and for homogeneous bodies. Boundary conditions, uniqueness of solution.

Isothermal surfaces in homogeneous infinite solid. Solution in the following cases of isotropic bodies.

(A) The Linear Flow.—Complete Study. (1) The infinite solid. (2) The semi-infinite solid; various problems in constant, variable and periodic temperature at the surface, with application to terrestrial temperature. Reduction of the problem of cooling by radiation to the problem of cooling by conduction. (3) The finite rod, including Fourier's ring. Solution by Fourier's series for constant, variable and periodic temperature at the surface. Angstrom's method for finding conductivity experimentally. (4) Heat sources, instantaneous and continuous: application to semi-infinite solid, finite rod, and Fourier's ring, when there is no radiation. (5) Application of Green's function in heat to simple cases of linear flow, not including radiation.

(B) The flow in more than one dimension.—Simple study. Simple cases of steady and variable temperature for infinite solid, semi-infinite solid and finite rod. Application of conjugate functions to problems of steady temperature in two dimensions.

(C) Radial flow.—The infinite and semi-infinite circular cylinder with or without radiation, initial temperature being constant or a function of the distance only. The sphere, with or without radiation, initial temperature being a function of the distance only. Spherical surface source.

(D) Conduction of heat in crystalline bodies.

Standard to be found in Carslaw:—

Chapters IX—XIV nearly complete.

Chapters XV—XVIII greatly restricted.

Books recommended:—

(1) H. S. Carslaw:—Mathematical Theory of the Conduction of Heat.

(2) J. Boussinesq :—Theorie Analytique de la Chaleur.

(3) H. Poincare :—Theorie Analytique de la Propagation de la Chaleur.

(4) L. R. Ingersoll and O. J. Sobell :—An Introduction to the Mathematical Theory of Heat Conduction.

(5) Fourier :—Theories Analytique de la Chaleur (English translation by Freeman).

(6) Preston :—Theory of Heat.

Note :—**For syllabuses in other subjects under this Branch** *vide* **syllabuses in Branch I-A—Mathematics—B.A. (Honours) Degree Examination.**

Branch I-B—Statistics.

The same as for Branch I-B, B.A. (Honours) Degree Examination, *viz* :—

Theory of Probability.—Definition—mutually exclusive events—logical sum and logical product—relative probability and Independence—mathematical expectation—Bernoulli's Law of large numbers—Tchebycheff's theorem—the theory of dispersion—Bernoullian, Poisson and Lexis series—Application to statistical problems—random variates and theorems on expectation—characteristic functions (or moment generating functions)—application to normal distribution, Poisson distribution, rectangular distribution—application to the distribution of the mean of a random variable—Inverse probability, fiducial probability and confidence intervals.

Finite Differences.—Symbolic operators *n*th differences of a tabulated function—different formula for interpolation, central differences and their application for interpolation—derivatives of a function in terms of differences—inverse interpolation—interpolation in tables of double entry—formula for quadrative graduation by emp rical formulae.

Statistical Methods.—Collection of data—classification and tabulation—diagrammatic representation by charts and graphs.

Single Variables.—Measures of central tendency and dispersion.

Curve Fitting.—Method of least squares—derivation and use of normal equations. Orthogonal polynomials—method of moments and fitting the Pearsonian family of curves, namely, normal curve non-normal, symmetrical curves type II and type VII, asymmetrical curves types I, III, IV, V and VI. Other methods of fitting curves—Graham Charlier's curves.

Two or more Variables.—Tests of independence and association of variables—co-efficient of contingency—different methods of estimating the co-efficient of correlation—by product moments, method by ranks, etc. The bivariate normal correlation surface—non-linear regression correlation ratio—partial and multiple regression.

Analysis of Variance.—Analysis of variance for k samples and z and l tests—analysis of variance appropriate to double and multiple classifications—analysis of regression—randomisation—randomised blocks and Latin square layout—factorial analysis and simple examples of confounding experiments.

Estimation and Testing of Hypothesis.—Efficient and sufficient statistics and the use of method of maximum likelihood—Transformation of probability laws—derivation of fundamental distributions of λ^2, t and Fisher's z tests. Estimating the fiducial limits for the population values of arithmetic mean-standard deviation—co-efficient of correlation and regression co-efficients from samples—use of power functions in testing hypothesis—Neyman-Pearson λ criterion for testing hypothesis and its application to elementary cases of simple and composite hypothesis.

Analysis of time series.—Finding the seasonal fluctuations and general trend. Application of periodgram analysis and other methods for finding the probable length of the periods in cyclical fluctuation.

Text-Books :—

Yule and Kendall : Introduction to the Theory of Statistics.
Tippett : Methods of Statistics.
Brunt : Combination of Observations.
Reitz : Mathematical Statistics.
Elderton : Frequency Curves and Correlation.
Whittaker and Robinson : Calculus of Observations.
R. A. Fisher : Statistical Methods for Research Workers.
R. A. Fisher : Design of Experiments.
A. Fisher : Probability.
Levy and Roth : Elements of Probability.

Papers appearing in Biometrika, Metron, Annals of Mathematical Statistics, Journal of the Royal Statistical Society and Philosophical Transactions of Royal Society.

Elements of General Algebra.

[Compulsory subject for B.A. (Hons.) and B.Sc. (Hons.) in Statistics, and optional subject for B.A. (Hons.) Mathematics.]

I. Standpoint and scope of Modern Algebra. Groups and Rings, Abelian Group. Module. Transformation Group. Permutation Group. Normal sub-Group. Quotient group. Homeomorphism, Isomorphism. Inner and outer Automorphisms. Normalisator, Central. Composition series. Simplicity of the Alternating group on $n>4$ symbols. Canonical basis of the finite Abelian Group.

II. Rings. Homeomorphism. Two-sided Ideals. Commutative Rings. Integrity-domain and its quotient field. Polynomial extension of a Ring and of an integrity domain. Division Algorithm in the Polynomial ring.

The ideal—theory of the commutative ring with principal unity. Congruence. Residue—class-ring or quotient-ring. Ideal-sum and Ideal product. Principal, prime and factorless ideals.

Unique factorisation theorems in (1) principal-ideal rings; (2) Polynomial rings.

III. Commutative Fields. Prime-field. Characteristic of a field. Algebraic and Transcendental extension of a field. Alegebraically conjugate fields. Zeroes and factorisation of polynomials. Resolvent field of a polynomial. Cyclotomic-field. Galois fields. Theory of Real fields. Ordered fields.

IV. Theory of symmetric functions. Resultant. Discriminant. Operators of the theory of symmetric functions.

V. The General Linear Associative Algebra over a field F. The total Matric Algebra over a field F. Equivalence, similarity, congruence. Bilinear and Quadratic Forms. Elementary Divisors, Canonical forms. Characteristic equation and minimal equation. Symmetric, Skew-Hermitian Matrices. Orthogonal Equivalence.

References.—

1. Van der Waerden: Modern Algebra, Erstertail.
2. Albert: Modern Higher Algebra.
3. Macmohan: Combinatory Analysis.
4. Weber's Algebra.

Branch II—Physics.

PHYSICS—MAIN.

PROPERTIES OF MATTER.

Acceleration due to Gravity:—Atwood's machine—bifilar suspension—simple pendulum—Compound pendulum—theory of Kater's reversible pendulum—corrections for (1) finite arc of swing, (2) air drag, (3) rounding of knife edges, (4) yielding of support, (5) damping of oscillations, (6) gravity variations—small oscillations—ball on a concave surface—rod on a cylinder.

Attractions and Potentials:—Constant of Gravitation—mass and density of the earth—measurement of the Constant of Gravitation—potential due to a (1) spherical shell, (2) solid sphere at a point outside and at a point inside, (3) uniform rod.

Elasticity:—Hooke's Law—stress, strain, moduli of elasticity of homogeneous bodies and their relations with one another—torsion of a cylinder—torsional oscillations (and coupled oscillations)—bending of beams—cross section of cantilever and beams supported at two knife edges and clamped at the ends—Searle's method for elastic constants of a wire—reciprocity of load and depression—Koenig's method for beams—beam bending under its own weight—spiral springs, flat and

oblique—depression due to load and expressions for periods of oscillation vertical and angular—elastic curves and stability of loaded pillars —isothermal and adiabatic elasticities—bulk modulus of liquids—compressibility and tensile strength of liquids—compressibility of gases.

Surface Tension :—Molecular forces—total surface energy—pressure on a curved membrane by application of the principle of virtual work—stability of nearly cylindrical films—angle of contact and its measurement—measurement of surface tension by capillary ascent. Quincke's method of large drops. Rayleigh's method of ripples—oscillation of a spherical drop of liquid—detachment of plates—Jaegar's method and variation of surface tension with temperature—Thermo-dynamical application for temperature alterations accompanying sudden alterations of area of films—surface tension of very thin films—variation of surface tension with contamination of surface—vapour pressure over a curved surface—formation of drops—Laplace's theory of capillarity, the constant and the estimates of its value.

Osmosis and Diffusion in Liquids:—Laws of osmosis—diffusion of liquids and Fick's Law—methods of measuring co-efficient of diffusion —vapour pressure over a solution—elevation in boiling point and depression in freezing point—Brownian movement—Perrin's experiment and determination of Avogadro's number from observations of colloidal particles along a vertical column—co-efficient of diffusivity and displacement of colloidal particles.

Viscocity :—Definition—flow of a liquid through a capillary tube—flow of a gas through a capillary tube—methods of measurement of the co-efficient of viscosity and its variation with temperature for liquids and gases—revolving cylinders—method of the revolving disc—viscosity of gases and its variation with temperature and pressure—method of dimensions applied to viscous drag of a body moving through a liquid.

Pumps and pressure Gauges:—Diffusion pumps and molecular pumps—McLeod gauge.

HEAT.

Thermometry:—Mercury thermometers; gas thermometry—standard gas thermometers, constant volume and constant pressure types: perfect gas scale; reduction of readings on a gas thermometer to the perfect gas scale; resistance thermometry and thermo-electric thermometry.

Calorimetry:—Specific heat of solids—method of mixture. Nernst calorimeter, E. H. and E. Griffith's experiments, liquid air and liquid hydrogen calorimeters; experiments at high temperatures.

Specific heat of liquids:—Method of mixture; Callendar's continuous flow method; method of cooling. Specific heat of water—experiments of Joule, Rowland, Griffiths, Callendar and Barnes, Laby and Hercus, Jaegar and Steinwehr. First law of thermo-dynamics.

Specific heat of gases :—(i) At constant volume—Jolly's steam calorimeter, Piar's explosion method, Euicken's experiments on hydrogen at low temperatures; (ii) at constant pressure—experiments of

Regnault, Holborn and Henning, Swam, Scheel and Heuse. Ratio of specific heats—experiments of Clement and Desormes, Lummer and Pringsheim, Kundt, Partington, and Shilling and Dixon.

Fusion:—Latent heat of fusion ; Bunsen's ice calorimeter ; measurement of latent heat of fusion of metals.

Evaporation:—Latent heat of vaporisation—experiments of Hennings, Simon and Lange, Berthelot, Awbery and Griffiths ; Trouton's rule.

Thermal expansion:—Linear expansion of solids, of crystals; Fizeau's interference method, Robert's optical lever method ; Gruneisen law.

Expansion of liquids—hydrostatic method, Callendar and Moss apparatus.

Continuity of state:—Compressibility of gases at high pressures, Andrews' experiments, properties of Van der Waal's equation, comparison with experiments, law of corresponding states ; Berthelot's equation of state. Critical phenomena ; properties of a substance near the critical point. Liquefaction of gases ; principle of cascades. Joule-Thomson effect, the porous plug experiment—Huxton's apparatus ; air liquefiers ; liquefaction and solidification of hydrogen and helium ; use of liquid air and other liquefied gases. Production and measurement of very low temperatures.

Thermal conductivity:—Rectilinear flow of heat in an isotropic body, Fourier's linear diffusion law, diffusivity ; steady state—Ingen-Hausz's experiment ; Forbes' method, Angstrom's method ; conductivity of earth's crust. Electrical methods—Kohlrausch experiments by Jaegar and Dieselhorst, conductivity of poorly conducting materials. Wiedemann—Franz law simple theory—Drude, difficulties of the theory. Super conductivity. Euiken's determination of conductivity of crystals.

Conductivity of liquids—Film method :—Conductivity of gases—hot wire method, cooling thermometer method, film method ; variation of conductivity with temperature and pressure, relation between thermal conductivity and viscosity ; determination of molecular dimensions.

Thermo-dynamics:—First law, application to specific heats, work done in isothermal and adiabatic expansions.

Heat engines, the Carnot engine, efficiency, Carnot's theorem ; Rankine's cycle, performance of an actual steam engine, the indicator, the I.H.P., and B.H.P., mechanical efficiency, thermal efficiency. Internal combustion engines—the Otto cycle, the Diessel cycle ; refrigerating machines, co-efficient of performance. Second law of thermo-dynamics, absolute scale of temperature ; entropy, reversible and irreversible processes, principle of increase of entropy.

Maxwell's thermo-dynamical relations, application to specific heats, Joule-Thomson effect, correction of gas thermometer, thermo-dynamic potential at constant volume—Gibbs-Helmholtz equation ; thermo-dynamic potential at constant pressure—application to change

of state, equations of Clapeyron and Clausius ; specific heat of saturated vapour, triple-point.

Radiation :—Theory of exchanges ; Kirchhoff's law—application and quantitative proofs ; temperature radiation, black body—realisation of pressure of radiation—experimental proof, energy, density and pressure of diffused radiation—Boltzmann's proof of Stefan's law, experimental verification and determination of Stefan's constant—Coblentz. Radio-meters, radiation pyrometers—Fery, optical pyrometers. Solar constant—Pyrheliometers, effective temperature of the Sun—total radiation method, Wien's distribution law method.

Adiabatic expansion of radiation, Wien's displacement law, experimental verification.

Number of independent vibrations of a continuous medium, Rayleigh's radiation formula. Planck's radiation formula, experimental verification of Planck's law—the isothermal and isochromatic methods, determination of h. Planck's constant.

Specific Heats and Quantum Theory :—Solids—Dulong and Petit's law, its failure, Einstein's theory, and Debye's theory of specific heat of isotropic solids ; comparison with experimental results. Gases—degrees of freedom, the equipartition of energy—specific heats, comparison with experimental values : specific heat of hydrogen at low temperatures. Application of quantum theory of di-atomic gases.

ELECTRICITY.

Eloctrostatics :—Gauss' theorem—potentials and intensities for a sphere, cylinder and plane—electric doublet ;—capacities, spherical, cylindrical and parallel plate—measurement of specific inductive capacity—force on a charged conductor and energy in the medium—boundary conditions of intensities in different media separated by two dielectrics — electrostatic machines — Attracted disc electromter—Quadrant electrometer—methods of images—point charge in front of (1) a conducting plane (2) a dielectric plane—point charge in front of a conducting sphere—conducting sphere in a uniform field—dielectric sphere in a uniform field.

Magnetism :—Potential and force due to a small magnet and due to a magnetised body—potential of magnet in magnetic field—potential due to a shell and potential of a shell in a uniform field—uniformly magnetised sphere—theories of magnetism—magnetic induction, permeability, susceptibility—study of hysteresis—methods of measuring the above— Paramagnetism and Diamagnetism.

Electric Circuits :—Ohm's law— resistance—heating effect—Kirchhoff's laws—theory of the Wheatstone's net—Faraday's Laws of electrolysis,

Magnetic Effect of a Current :—Work done in taking a magnetic pole round a closed circuit—magnetic force due to an infinitely long straight current—magnetic force inside a conductor carrying a current-solenoids and endless solenoids—magnetic force due to a circular current—Helmholtz's galvanometer—mechanical force acting on a conductor carrying a current placed in a magnetic field—co-efficient of self and mutual induction—theory of alternating current generators

and direct current generators and motors—growth and decay of current in an inductive circuit under constant E.M.F.—alternating E.M.F. in a circuit with resistance and inductance —impedance, reactance—virtual volts and virtual amperes—energy in circuits—coil rotating in a magnetic field—theory of transformers—repulsion between a conductor and an alternating current circuit—rotating magnetic field—current produced in a mass of metal by an impulse and distribution of an alternating current in a conductor—oscillatory discharge of a condenser—alternating E.M.F. acting in a circuit containing a condenser—methods of measuring co-efficient of self-induction and mutual-induction—theory of the ballistic galvanometer (moving coil and moving magnet types).

Primary Cells :—Applications of thermo-dynamics—Helmholtz's equation—reversible cells—standard cells—theory of secondary cells.

Thermo-electricity :—Peltier effect—Thomson effect—thermo-electric E.M.F's. and diagrams.

Units and Dimensions :—Electrostatic, magnetic and electro-magnetic quantities—ratio of units.

Absolute measurements : —Measurement of the ohm (Lord Rayleigh's and Lorentz's methods)—Maxwell's method for capacities—the absolute current and absolute E.M.F.

Electromagnetic Wave :—Maxwell's equations and solution for wave-propagation—Hertz's experiments—reflection, refraction, polarization of electric waves—stationary waves—detection of waves—crystal detector, triode valve detector—oscillators—Duddel's arc—Poulson's arc—Lecher wires—cymometers—determination of dielectric constants by oscillations.

Passage of Electricity through Gases :—Discharge at low pressure—nature and properties of cathode rays—nature and properties of X-rays—determination of v, e/m and e. (J. J. Thomson, C. T. R. Wilson, Millikan)—method of leakage by ultra-violet light—conduction in ionised gas and saturation current—secondary X-rays—X-ray spectroscopy—canal rays, J. J. Thomson's experiment—mass spectra and Aston's sxperiments—radioactivity and radioactive emanations—constitution of the atom—nuclear theory.

SOUND.

Dynamical :—Harmonic waves, longitudinal progressive waves, plane waves in a gas. Speed of sound in a gas and in a solid rod. Speed of transverse waves along a cord. Reflection at a fixed and open end. Energy of progressive waves.

Damped S.H.M., forced S.H.M. ; energy of forced vibrations and sharpness of resonance ; coupled oscillations—without damping, multiple resonance. Theory of combinational tones.

D'Alembert's equation and its solution : vibration of strings—plucked string, struck string and bowed string ; torsional vibration of rods ; transverse vibrations of bars—application to tuning fork ; vibrations of rectangular stretched membranes—Chaldni's figures.

Vortex formation and Aeolian tones; vibrations of air in wide tubes; open-end corrections; conical tube; edge tones; the organ pipe.

Physical:—Resonators—Helmholtz's resonator, theory and application; reasonators with variable neck and multiple openings. Rayleigh's disc and phonometer, hot wire microphone; striae in Kundt's tube; pressure of sound waves; sound radiometers; Piezo electric quartz resonator. Electrical analogy—acoustic impedance, invertance and capacitance, acoustic filters; double resonators, applications to sound intensity measurements and measurement of absorption co-efficients by stationary wave method; absolute pressure measurements.

Velocity of sound in solids, liquids and gases and its determination. Frequency and its determination. Reflection and refraction of sound. Dopplers' principle. Sound-wave photography and acoustics of buildings. Spark and rippletank methods.

The ear, limits of audition, minimum amplitude audible and its measurement, theories of audition, mechanism of nerve conduction. Consonance and dissonance, the musical scales, temperament.

Quality of sound, its analysis; acoustic spectra; Miller's Phonodeik, oscillographs; the voice: analysis of speech sounds, harmonic and inharmonic theories. Paget's experiments, Miller and Crandell's work. Speech power, sensation, unit-decibel: noise and its measurement.

Gramophones and loud speakers; the phonofilm.

LIGHT.

Geometrical Optics.—Principal foci and focal planes; linear and longitudinal magnification; thin lenses, combination of two thin lenses and cardinal points; thick lenses, and cardinal points.

Dispersion and achromatism; dispersive power; chromatic aberration, achromatic combinations of prisms and of thin lenses; object glasses and eye-pieces.

Spherical aberration, caustics, circle of least confusion, aplanatic surfaces, aplanatic points and microscope objectives; remedy for spherical aberration; astigmatism, curvature, distortion. Figuring of a spherical surface—Foucault's test.

Optical instruments; spectroscope, constant deviation type and direct vision type; telescopes; microscopes; sextant; binoculars; stereosocope; photographic camera; telephotography and microphotography.

Spectrometry:—Calibration of spectrometers; Hartmann's dispersion formula. Production of spectra; types of spectra; Doppler's principle and applications. Spectrometry of infra-red rays, of visible rays, and ultra-violet rays.

The rainbow:—Spurious bows, Airy's explanation, Miller's experiments.

Velocity:—Fizeau's method, Foucault's method, Newcomb's experiments; Michelson and Pearson's experiments. The astronomical methods.

Wave Theory:—Huyghens' principle: reflection and refraction at plane and spherical surfaces; optical length and optical distances; Fermat's principle and its application; rectilinear propagation of light; zone plate.

Interference—Conditions necessary for interference; Fresnel's mirrors; biprism; Lloyd's mirror, bi-plate; colours of thin films; thick plates; Newton's rings; Haidinger's fringes.

Refractometers; variation of refractive index with density, Gladstone and Dale's law, Lorentz—Mossoti formula. Michelson's interferometer; determination of refractive index and dispersion; determination of the length of standard metre; measurement of the diameter of stars; the echelon grating; Fabry and Perot's interferometer: Lummer and Ghercke's interferometer. Stationary light waves, colour photography. Testing glass plates for flatness and plane-parallelism.

Diffraction:—Elementary theory of diffraction at a straight edge, narrow wire, narrow rectangular aperture, circular aperture, circular disc. Babinet's principle; halos, Young's Eriometer. Plane diffraction grating, dispersive power, resolving power, purity of spectrum, absent spectra; concave grating, Rowland mounting, Eagle mounting; measurement of wave length. The graphical method of investigating the intensity of diffraction patterns in the cases considered above. Diffraction at a straight edge, Fresnel's theory; Cornu's spiral. Franhaufer diffraction phenomena, determination of maxima and minima in the case of a narrow rectangular aperture, two equal rectilinear apertures and the diffraction grating. Resolving power of a prism, a telescope and a microscope.

Polarisation:—Polarisation by reflection and refraction; Norremberg's polariscope; law of Malus: pile of plates. Polarisation by double refraction. Nicol's prism, Huyghen's construction of wave surfaces in uni-axial crystals; experimental verification. Fresnel's theory of double refraction; the normal velocity surface, the wave surface; axes of single wave velocity; internal conical refraction; axes of single ray velocity; external conical refraction. Interference of polarised light—colours of thin crystalline plates in (i) parallel plane polarised light; (ii) convergent or divergent plane polarised light; isochromatic and achromatic lines in uni-axial and bi-axial crystals. Production and detection of (1) plane polarised light; (2) circularly polarised light—Fresnel's rhomb; (3) elliptically polarised light—Babinet's compensator, determination of the constants of elliptical polarisation. Elliptical polarisation by reflection. Rotation of plane of polarisation; Fresnels' explanation of rotation; Fresnel's experiments; Cornu's prism; Babinet's experiments; rotation of plane of polarisation by liquids; polarimeters. Rotatory dispersion. Experimental study of the Faraday Effect.

Electro-magnetic Theory of Light:—Derivation of Maxwell's equations, displacement currents, equation for an electro-magnetic wave, velocity of the wave; deduction of the laws of reflection and

refraction for transparent media, perpendicular incidence ; explanation of total reflection ; explanation of metallic reflection.

The theory of dispersion—Cauchy, Sellmeier, Helmholtz's electron theory of dispersion, normal dispersion. anomalous dispersion. Selective reflection—Rest-strahlen—residual rays from powders.

MODERN PHYSICS.

The subject-matter contained in Richtmeyer's "Introduction to Modern Physics" with the addition of the following :—

Scattering of Light :—

(*a*) Theory of molecular scattering by Rayleigh and Schuster ; scattering of light in gases and in liquids—the blue of the sky, the colour of the sea ; Einstein and Smoluchowski ; work of Rayleigh, Cabannes, Raman, and Ramanathan.

(*b*) Experimental method of investigating the Raman effect ; intensity and polarisation of the Raman lines ; Raman effect in gases, liquids and crystals ; relation to infra-red and ultra-violet absorption ; Raman effect and chemical constitution.

Associated with the syllabus in "Modern Physics" given above, there should be arranged a related course of practical work, and the following experiments are suggested to make up this course :—

(1) Determination of the radiation constant.

(2) Variation of the photo-electric current with light intensity.

(3) Simple valve circuits—(*a*) for transmission of signals ;
(*b*) for reception of signals.

(4) Quartz Mercury lamp illumination and the spectrograph :—

(*a*) The Balmer hydrogen lines ; evaluation of Rydberg's constant.

(*b*) Use of Hartmann's interpolation formula.

(5) The Zeeman effect.

MODERN PHYSICS—I.

Relativity and Quantum theories :

General conception of Relativity theory, Lorentz transformation. Equivalence of mass and energy.

Origin of the Quantum theory. Planck's radiation Law. Energy quanta.

Wave mechanics. Matter waves. De Broglie's fundamental postulates. Application to moving electrons. Wave-Length of electron waves. Identification of electron velocity with group velocity of waves. Electron diffraction experiments of Davisson and Germer, G. P. Thomson and others. Development of Schrodinger's fundamental equations of wave mechanics. Conception of characteristic values. Elementary application to linear oscillator and rotator, Principle of indeterminacy.

Thermionic and Photo-electric effects :

Emission of electrons by hot bodies. Theories of electrons in metals. Work function. Richardson's equation.

Photo-electric emission. Relation to intensity of illumination, cathode potential, frequency of incident radiation. Source of Photo-electric energy ; failure of classical theory. Explanation on quantum theory. Einstein's Photo-electric equation and its experimental verification. Theories of the origin of photo-electrons. Einstein's law of equivalence. The photo-electric cell and its uses.

Nuclear theory of the Atom and origin of Spectral lines :

Relationships between spectral lines. Balmer and other hydrogen series. Rydberg formula. Rydberg constant. Rydberg-Schuster law. Series in spectra of alkali metals. Spectral terms and their significance on quantum theory. Energy levels.

Constitution of the Atom. Thomson's theory. Scattering of alpha particles by matter and Rutherford's theory of the nuclear atom.

Bohr's theory of the hydrogen atom. Correction for finite mass of nucleus. Spectroscopic value of e/m. Correspondence principle. Sommerfeld's extension to elliptical orbits. Relativity correction. Fine structure of hydrogen lines. Determination of e, m and h from spectroscopic data.

Difficulties of extension of Bohr-Sommerfeld theory to many-electron atoms.

Absorption of energy by atoms. Excitation by electronic bombardment, by irradiation, and by collision with other atoms. Excitation and ionisation potentials. Electrical methods of observation. Experiments of Davis and Goucher.

Units used in atomic and nuclear Physics.

Vector model of the Atom, and Optical Spectra :

Origin of the 'vector model' : Spatial quantization and spinning electron. Representation of angular momentum by vectors. Orbital and spin angular momenta of electrons. The different quantum numbers associated with the vector models and their magnitude according to the older quantum theory and the wave-mechanical theory. Resultant vectors for many-electron atoms. Coupling.

Pauli's exclusion principle and its application to the electron configuration of the elements and their periodic classification.

Designation of spectral terms and atomic energy state. Application to 'one-electron' and 'two electron' etc. spectra.

Application of the vector model to fine structure of spectral lines.

Zeeman effect, normal and anomalous. Paschen-Back effect.

Stark and lo Surdo effects (descriptive treatment only).

The Width of spectral lines.

'Forbidden' lines in atomic spectra.

Molecular spectra—rotation, rotation-vibration and electronic spectra. Effect of isotopy on molecular spectra.

Experimental confirmation of the vector model. Stern and Gerlach experiments on deviation of atomic rays, Magnetic moment of the atom. The Bhor magneton.

X-rays :

Production and general properties. Absorption and fluorescence. Classical ether-pulse theory.

Diffraction of X-rays by crystals. Experiments of Laue, Friedrich and Knipping. Elementary theory of crystal grating. Bragg's law, and its correction for refraction. X-ray spectrometer. Total reflection of X-rays. Determination of refractive index. Use of ruled gratings.

Characteristic X-rays. Moseley's law. X-ray energy levels, K.L.M. etc., series.

Continuous X-ray spectrum; failure of classical theory and explanation on quantum theory.

Critical absorption limits and their explanation.

Scattering of X-rays. Failure of classical theory of intensity and angular distribution. Compton effect and its explanation on quantum theory.

Application of X-rays to crystallography. Crystal structure of KCl and NaCl. Determination of grating space.

The Nucleus and its properties :

Charge; experimental determination. Size: Rutherford's scattering experiments; nuclear dimensions. Mass: Positive rays. Work of J. J. Thomson. Discovery of isotopes. Mass spectrographs of Aston, Dempster, Bainbridge, etc.

Atomic number and mass number. Mass defect and packing fraction.

Nuclear spin. Hyperfine structure of spectral lines. Determination of spin and magnetic moment of nucleus.

Radioactivity. Discovery. α—, β—, and γ—rays, and their detection and measurement. Detailed study of their nature, origin,

spectra and interaction with matter. Law of radio-active disintegration. Radioactive transformations and series.

Artificial disintegration of atoms. Experimental Methods. Production of high-energy atomic projectiles by high voltages cyclotron, etc. Discovery of the neutron and positron. Artificial or induced radioactivity.

Practical methods of detecting and measuring atomic and sub-atomic particles. Wilson's cloud chamber, counters, magnetic specctrographs. Theories of nuclear constitution and stability.

Cosmic rays:

Discovery. Penetrating power. Variations in intensity. Effect of the earth's magnetic field. East-West effect. Cosmic ray showers. The mesotron. Theories of origin.

Scattering of light and the Raman effect:

Rayleigh's theory of molecular scattering. Scattering in gases and liquids; blue of the sky, etc. Work of Einstein and Smoluchowski, Raman and Ramanathan.

Raman effect; Experimental methods of investigation. Intensity and polarization of Raman lines. Relation to infra-red and ultra-violet absorption. Application to chemical constitution in simple cases, *e.g.*, N_2o, Co_2, etc.

TEXT-BOOKS

Books for Study:—

General—

1. Poynting and Thompson: Properties of Matter.
2. Newman and Searle: Properties of Matter.
3. Barton: Text-Book of Sound.
4. Richardson: Sound.
5. Preston: Theory of Heat.
6. Preston: Theory of Light.
7. Starling: Electricity and Magnetism.
8. Worsnop and Flint: Practical Physics.

Special Subjects:—

9. Greenwood: Text-Book of Wireless Telegraphy and Telephony.
10. De Broglie: X-Rays.
11. Bloch: Kinetic Theory of Gases.

Modern Physics:—

12. Richtmeyer: Introduction to Modern Physics.
13. Semat: Atomic Physics.

Books for Reference :—

General—

1. Lamb : Dynamics.
2. Edser : General Physics.
3. Searle : Experimental Elasticity.
4. Searle : Experimental Harmonic Motion.
5. Houstoun : Light.
6. Clay : Treatise on Light.
7. Thomson, J. J. : Elements of Electricity and Magnetism.
8. Pidduck : Treatise on Electricity.
9. Jeans : Electricity and Magnetism.
10. Clayton : Alternating Currents.
11. Lamb : Dynamical Theory of Sound.
12. Schuster : Theory of Optics.
13. Baly : Spectroscopy.
14. Wood : Sound.
15. Saha and Srivatsa : A Text-Book of Heat.
16. Millikan : The Electron.
17. Watson : Practical Physics.
18. T. N. Seshadri : A Handbook of Mathematical Tables and Physical Constants. (S. Viswanathan, 2/10, Post Office Street, Madras).

Modern Physics—

19. Max Born : Atomic Physics (Blackie & Son).
20. Castel-Franchi : Recent Advances in Atomic Physics (2 Volumes).
21. Newman, F.H. : Recent Advance in Physics.
22. Harnwell and Livingood : Experimental Atomic Physics.

Special Subjects—

23. Palmer : Principles and Practice of Wireless.
24. Stanley : Text-book of Wireless Telegraphy (2 Vols.)
25. Henney : Principles of Radio.
26. A. H. Compton and S. K. Allison : X-rays in theory and experiment—Macmillan, May, 1935.
27. Seigbahn : Spectroscopy of X-rays.
28. Bragg : X-rays and Crystal Structure.
29. Clark : Applied X-Rays.
30. Loeb : Kinetic Theory of Gases.

Syllabuses in Optional Subjects in Physics.

1. KINETIC THEORY OF GASES AND ITS APPLICATIONS.

Maxwell's Law of distribution of Molecular velocities.

Proof of the Law by the method of : (1) probabilities ; (ii) variation of pressure with height ; (iii) Collisions. H—Theorem and the meaning of H. Applications of Maxwell's Law.

Experimental proof of Maxwell's Law : (i) by direct method ; (ii) from the finite breadth of spectral lines.

Mean-free path ; expressions for mean-free path ; experimental determination of mean free path.

Virial Theorem ; Equations of State—

Vander Waal Claussius.

Dietrici.

Transport problems ; Viscosity, Heat conduction and diffusion.

Theory of specific Heats.

Fluctuations and Brownian movement ; Perrins Experiments, Avagadro's Number and size of molecules.

Low pressure phenomena in gas : pumps and gauges.

Boltzman's Statistics and Equiportion of Energy.

Statistical Thormo-dynamics—

Boltzman's Theorem ; calculation of P thermo-dynamic probability from classical Statistics ; from Bose-Einstein Statistics and Fermy-Dirae Statistics ; degeneracy parameter.

Statistics of Photons and Law of Black body Radiation.

Evaluation of Thermo-dynamic quantities in the Three States.

Convective Equilibrium.

Text-books.—

(i) Bloch.

(ii) Loeb. } relevant portions.

(iii) Saha }

2. RADIATION—A. ELECTRICAL WAVES, WIRELESS TELEGRAPHY AND TELEPHONY.

From the end of the course in Electricity and Magnetism for B.Sc. (Hons.)

I. Alternating Current Theory—continued and expanded. Vector diagrams, J-notation.

A. C. applied to circuits containing inductance, capacity and resistance.

Free and forced oscillations.

Resonance and tuning; resonance curves; decrement and selectivity.

Acceptor and Rejector circuits—Current resonance and voltage resonance.

Coupled circuits in general; coupling factor.

Filters—high, low and band-pass.

Theory of the transformer.

II. Early forms of R. F. generation; spark, arc. C. W. and interrupted C. W.

The quenched spark system.

The Duddel and Poulsen Arcs.

The Alexanderson and Goldschmidt R. F. generating Alternators.

III. (*a*) Theory and practice of thermionic valves. Filament and emission. Hard and soft valves. The Diode and rectification—half and full wave. The Triode and its static and dynamic characteristics: its constants—mutual conductance, amplification factor and A. C. resistance. Inter-electrode capacities and neutralising methods. The screen-grid valve; R. F. and A. F. pentodes. Variable slope R. F. pentodes: the heptode, octode and triode-hexode frequency changing valves and their general operation. Experimental study of valve characteristics and determination of constants.

(*b*) The valve as generator of R. F. Principle of reaction or regeneration, and theory of simple valve oscillator. Hartley and Colpitt circuits. Class A. B. and C. operation. Power in oscillating circuit. The decibel. General multiple valve transmitter assembly and Control of frequency. Stabilisation by use of Quartz crystals. Arrangements for keying.

(*c*) Telephony; comparative study of types of microphones. Methods of modulation in general use. Percentage modulation and its measurement. Side bands; power in side bands; single side band telephony.

(*d*) General principles of detection of R. F. signals. Crystals and their characteristics. The Diode valve detector. The Triode as detector, by anode bend, leaky grid and power grid methods.

(*e*) General principles of amplification. Voltage set-up by triode. Tuned Anode, resistance-capacity and choke-capacity couplings. R. F. amplification per stage. Miller Effect—tuned anode and tuned grid coupling. A. F. stages of amplification—class A, class B and class A. B. Output valves in parallel; output valves in push-pull.

(*f*) Loudspeakers—vibrating reed type and moving coil type—permanent magnet and energised fields. Impedence matching at output stage for single valve, two valves in parallel and two valves

in push-pull. The gramophone pick-up—its general construction and working.

(*g*) Receivers. Circuit diagram for crystal with single valve A. F. amplifier. Circuit diagram for three-valve straight receiver employing R. F. detector and A. F. stages with reaction at detector stage. The superhetrodyne circuit—general principles. Choice of intermediate frequency; second channel selectivity, ganging and tracking. Principle and mode of obtaining manual and automatic volume control. Control of tone. Feed back defects and decoupling. Distortion—causes and methods of cure. Beam Power tubes and inverse feed back. Cathode-ray tuning indicators.

IV. Theory of electromagnetic radiation; propagation of wireless waves. Maxwell's equations—propagation in one, two and three dimensions. Watson and Austen-Cohen empirical formula for long distance propagation.

The ionosphere; source of free electrons and ions in the upper atmosphere. Effect on the propagation of wireless waves—dispersion, refraction, reflection and polarisation. Effect of Earth's magnetic field: Magneto-ionic splitting. Experimental knowledge of the ionosphere; critical frequency and ionic density. Measurement of heights of layers. Ground waves and sky waves:—attenuation, skip—day and night frequencies—fading and diversity reception. The Luxemburg Effect. Atmospherics.

V. General principles of radiation from aerials. Induction and radiation fields. Field strength. Aerial constants and their experimental determination:—aerial resistance, capacity, effective height and efficiency. Aerial coupling of transmitter. Dipole aerial. Loading of aerial with capacity and inductance. Function of Earth.

VI. Directional effect of two aerials carrying inphase and antiphase currents. Loop Antenna. Polar diagram of vertical aerial. Figure of Eight diagram. Cardioid diagram. Aerial arrays and their advantage. Array gain—beam transmission. Horizontal arrays. Reflectional arrays.

Directional reception. Beverage aerial, Bruce inverted V type and horizontal diamond shaped aerials. Direction finding and sense determination. The Robinson system and the Bellini-Tosi system.

VII. Radio frequency measurements involving the use of wavemeter, the cathode-ray oscillograph.

Valve and set testing instruments: the volt-ohm-milliampere meter, the valve voltmeter. Capacity and inductance measuring bridges.

VIII. Ultra short waves:—the Barkhausen-Kurz and Magnetron systems and circuits.

Books for reference:—

H. M. Admiralty Hand-book of Wireless. Vols. I and II.

Palmer: Principles of Wireless (Longmans).

Turner : Principles of Wireless (Cambridge University Press).

Terman : Radio Engineering (McGraw Hill).

Moullin : R. F. Measurements (Griffin).

Ghirardi : Modern Wireless servicing.

3. RADIATION—B. X-RAYS AND THEIR APPLICATIONS.

Production of X-rays—

Production and measurement of high vacua—Study of the discharge in gases at low pressures—Properties of Cathode rays—Rontgen's early experiments—Primary and secondary radiation.

X-ray gas tubes—Coolidge tubes—Demountable tubes.

High tension equipment—transformers and rectifiers—Measurement of the voltage—Electrical precaution.

Theory of spectra—

General ideas of atomic structure—Bohr's theory of spectra—Moseley's law.

Scattering of X-rays—

Magnetic field due to an electron in slow, uniform motion—field due to accelerated slowly moving electron—Thomson's theory of scattering by independent electrons—Scattering co-efficient—Hewlett's determination of the number of scattering electrons per atom of carbon—departures from theory—interpretations of these departures—Polarisation of scattered X-rays.

Study of crystal structure by X-rays—

Lane's discovery—the space lattice—cubic lattices—Bragg law—Bragg spectrometer—Structure of rocksalt (NaCl) and Sylvine (KCl)—Structure of diamond—Interpretation of Lane diagrams—Debye-Scherrer method of power photographs.

Absorption of X-rays—

Total and true absorption of X-rays—the measurement of absorption co-efficient—critical absorption wave-lengths—absorption discontinuities and the X-ray level scheme—Fine structure of absorption—edges and chemical effects in X-ray spectra.

Continuous X-ray spectrum—

The general characteristics of the continuous spectrum—the determination of the shortest wave length excited and the evaluation of the Planck's Constant—total energy of the continuous spectrum—Failure of the classical theory of the continuous spectrum.

The emission of spectrum—

X-ray spectra as a test of Bohr's theory—typical X-ray spectra—K. L. M. spectra—Energy level diagrams—the selection rules—Screening doublets and spin doublets—Sommerfeld's theory of the origin of the doublets—Experimental data on the relative intensities of X-ray lines—non-diagram lines.

Refraction of X-rays—

Classical derivation of the refractive index of X-rays—deviation from Bragg Law—experimental determination of refractive index by the following methods :—(i) study of Bragg reflection, (ii) Crystal wedge, (iii) total reflection, (iv) prism.—Agreement with theory—Significance of the values of refractive index.

Photo-electric effect with X-rays—

Einstein's photo-electric equation—Magnetic spectra of photo-electrons emitted by X-rays.

Methods of measuring X-ray wave-lengths—

Bragg reflection method—correction for the effects of refraction—the double spectrometer method—use of ruled gratings—superiority of this method—the photo-electric method for hard X-rays and γ-rays.

Compton effect—

The change of wave-length of scattered X-rays—experimental methods adopted for such studies—theory of photons scattered by electrons—measurements of the change of wave-length—recoil electrons ejected by X-rays—observations with the Wilson chamber.

Applications—

Use in medical diagnosis.

Examination of metal castings, welds, automotive and aircraft parts.

Qualitative and quantitative chemical analysis from X-ray spectra.

Study of the structure of steel and aluminium—structure of colloidal and amorphous materials and of liquids.

Measurement of X-ray intensity of dosage.

Reference books—

Ruark and Urey : Atoms, molecules und quanta.

Compton and Allison : X-rays in theory and experiment.

Seigbahn—Spectroscopy of X-rays.

Clark—Applied X-rays.

Bragg and Bragg—The crystalline state.

4. MODERN PHYSICS—II.

Maxwell's Law—

Proof, theoretical and experimental; fluctuations and finite width of spectral lines.

Raman effect—

(As in the present syllabus).

Statistical thermo-dynamics—

(As given in the syllabus on Kinetic Theory).

Theory of relativity—

Michelson Morely experiments; Fitz-Gerald and Lorentz Contraction hypothesis; Simultaneity according to Einstein; the Lorentz transformation; Einstein's theorem of addition of velocities. Explanation of Fitzeau's experiment, Doppler effect and Abberration. Variation of mass with velocity; equivalence of mass and energy.

Quantum mechanics—

De Broghes matter waves; Schroedinger's equation; Hessenberg's uncertainty relation; "Ergenwerte" of the Schroedinger equation and application to (i) the harmonic Oscillator, (ii) the rigid rotator and (iii) the Hydrogen atom.

Text-books—

(Kinetic Theory)—

A. General:—

(1) Bloch's Kinetic Theory of gases and its applications.
(2) Saha's Advanced text-book on Heat.

B. For Statistical Mechanics:—

(1) Relevant portions in Saha.
(2) Haas: Wave-mechanics.

PHYSICS—SUBSIDIARY.

The same as for B.A. and B.Sc.—Subsidiary Physics.

Branch III—Chemistry.

Text-books recommended for study.

I. INORGANIC CHEMISTRY (INCLUDING HISTORY OF CHEMISTRY).

A. *Text-books (Theory).*—

1. J. R. Partington: Text-book of Inorganic Chemistry (Macmillan).

2. G. T. Morgan and N. Burstall : Inorganic Chemistry : A Survey of Modern Developments (Heffer).
3. Mary Elvira Weeks : The Discovery of Chemical Elements (Journal of Chemical Education).
4. Hedges : Chapters in Modern Inorganic and Theoretical Chemistry (Arnold).
5. Thorpe : Essays in Historical Chemistry (Macmillan).

B. *Books for reference (Theory)*—

1. Fritz Ephraim : Text-book of Inorganic Chemistry, Translated by P. C. L. Thorne (Gurney).
2. Emeleus and Anderson : Modern Aspects of Inorganic Chemistry (Routledge).
3. S. Glasstone : Recent Advances in Inorganic Chemistry (Churchill).
4. B. S. Hopkins : Chapters in the Chemistry of less familiar Elements (Harrap).
5. Chemical Society Memorial Lectures, Volumes 1, 2 and 3 (Gurney).

C. *Text-books (Practical).*—

1. Treadwell and Hall : Qualitative and Quantitative Analysis (Wiley).
2. Riesenfeld : Laboratory Manual of Inorganic Chemistry Translated by Ray (C. C. & Co., Calcutta).

D. *Books for reference (Practical).*—

1. I. M. Kolthoff and E. B. Sandell : Text-book of Quantitative Analysis (Wiley).
2. Biltz : Laboratory Methods of Inorganic Chemistry.
3. A. King : Inorganic Preparations (Murby).
4. H. Franzen : Gas Analysis (Blackie).

II. ORGANIC CHEMISTRY.

A. *Text-books. (Theory).*—

1. P. Karrer : Organic Chemistry, Translated by A. J. Mee (Nordeman Publishing Co.)
2. J. B. Cohen : Organic Chemistry for Advanced Students, Volumes 1, 2 and 3 (Arnold).

B. *Books for reference (Theory).*—

1. H. Gilman : Organic Chemistry, Volumes 1 and 2 (Wiley).
2. Stewart : Recent Advances in Organic Chemistry, Volumes 1 and 2 (Longmans).
3. Sidwick's Organic Chemistry of Nitrogen by Taylor and Baker (Clarendon Press, Oxford).

4. Watson: Modern Theories of Organic Chemistry (Clarendon Press, Oxford).
5. Pictet: Vegetable Alkaloids.
6. Haworth: Constitution of Sugars (Arnold).

C. *Text-books (Practical).*—

1. Dey and Raman: Practical Organic Chemistry, Parts I and II (G. S. Press, Madras).
2. Clarke: Hand-book of Organic Analysis (Arnold).

D. *Books for reference (Practical).*—

1. Gattermann: Laboratory Methods of Organic Chemistry, Revised by Wieland (Macmillan).
2. Sudborough and James: Practical Organic Chemistry (Blackie).
3. Shriner and Fuson: Systematic Identification of Organic Compounds (Wiley).
4. Mulliken: Organic Analysis, Volumes 1, 2 and 4 (Wiley).

III. PHYSICAL CHEMISTRY.

A. *Text-books (Theory).*—

1. A. J. Mee: Text-book of Physical Chemistry (Heinemann).
2. McLewis: System of Physical Chemistry (Longmans).
3. J. A. V. Butler: The Fundamentals of Chemical Thermodynamics, Vol. I only (Macmillan).
4. J. Knox: Physiochemical Calculations (Methuen).

B. *Books for reference (Theory).*—

1. Hevesy and Paneth: Radioactivity (Oxford University Press).
2. Glasstone: Recent Advances in Physical Chemistry (Churchill).
3. Taylor: Treatise on Physical Chemistry (Macmillan).
4. A Text-book of Physical Chemistry by S. Glasstone (Macmillan).

C. *Text-book (Practical).*—

Findlay: Practical Physical Chemistry (Longmans).

D. *Book for reference (Practical).*—

Reilly and Ray: Physio-chemical Methods, Volumes 1 and 2 (Methuen).

SYLLABUS IN BIOCHEMISTRY.

Theory.

Physical phenomena in vital processes, e.g., Diffusion, Permeability, Osmosis, Surface Action, Absorption, etc.

Enzymes and the mode of their action. Chemistry of fermentation.

Chemistry of carbohydrates, fats, lipins, sterols, proteins.

Metabolism of fats, carbohydrates and proteins. Basal metabolism.

Chemical changes accompanying the phenomena of muscular contraction and muscular fatigue.

Blood and its composition. Chemistry of Haemoglobin.

Chemistry of plant pigments: Anthocyanins, Carotinoids. Chlorophyll. Tannins.

Internal secretions of the ductless glands: their function and general relation to metabolism. Chemistry of the active principles of internal secretions with special reference to adrenaline, insulin, thyroxin, pituitrin and oestrin.

Drugs and their mode of action. Relation between physiological action and chemical structure.

Toxins and Anti-toxins. Ehrlich's side-chain theory. Chemotherapy.

Vitamins.

Practical.

Methods of preparation of enzymes by dialysis, absorption and elusion. Preparation of malt and a study of the hydrolysis of starch.

Determination of hydrogen-ion concentration (*a*) potentiometrically, and (*b*) by indicators. Determination of the iso-electric point of casein.

Estimation of sugars (*a*) by Bertrand's method, and (*b*) polarimetrically.

Preparation of Glycine, Cystine, Tyrosine, Creatine, Cholesterol and Glycogen from natural sources.

Analysis of milk. Analysis of urine. Estimation of sugar and urea in (*a*) urine and (*b*) blood.

Estimation of amino-acids by Van Slyke's method. Estimation of peroxidases in common vegetables.

Elementary bacteriological technique; Preparation of media, sterilisation, isolation of pure organisms by culture, staining and mounting for photomicrographs.

Determination of phenol-coefficients of different disinfectants (Rideal-Walker Method).

Text-books.—

Bodansky: Introduction to Physiological Chemistry (Wiley).

Cameron: Text-book of Biochemistry (Churchill).

Pryde : Recent Advances in Biochemistry.

Gortner : Outlines of Biochemistry (Wiley).

Parsons : Fundamentals of Biochemistry (Heffer):

Cole : Practical Phsiological Chemistry (Heffer).

Ellis : Practical Bacteriology for Chemistry Students (Longmans).

Reference :—

Dale, Drummond and others: Lectures on certain aspects of Biochemistry (Cambridge University Press).

Ed. Needham and Green : Perspective in Biochemistry (C. U. P.)

SYLLABUS IN METALLURGICAL CHEMISTRY.

Theory :—

1. *Furnaces.*—Types of furnaces : refractories and air-supply,
2. *Fuels.*—Preparation and analysis of fuels. By-products in the gas industry : producer gas, water gas, blast furnace gases. Calorific value of fuels.
3. *Pyrometry.*—Pyrometers. Principles of their construction.
4. *Materials and processes of metallurgy.*—Ores, sampling methods preliminary treatment, fluxes and their function, slags and their economic uses.
5. *Assaying and Analysis.*—Assay of gold ores, silver bullion and tin ores.
6. *Metallurgy.*— of Copper, Silver, Gold, Nickel, Aluminium, Lead, Iron, Tin and Zinc.
7. *Properties of Metals.*—Crystalline structure ; Hardness ; High and low temperature effects ; Occlusion ; Diffusion ; Cementation ; Thermo-magnetic optical and electrical properties.
8. *Thermal treatment of Metals.*—Annealing ; Quenching ; Tempering ; Hardening.
9. *Alloys*—Modes of formation ; Views regarding constitution : Properties.
10. *Metallography and Microscopic Analysis.*
11. Electro-metallurgy of Copper, Lead and Aluminium Electro-smelting of Iron.
12. Metallurgy, with special reference to South India.

Practical.—

Analysis of coal.
Laboratory method of sampling.
Dry assay of Lead and Mercury.
Wet assay of Tin.
Assay of Silver bullion.
Estimation of carbon in steel

Text-books recommended.—

1. Roberts-Austen: An Introduction to the Study of Metallurgy (Griffin).
2. Beringer: Assaying (Griffin).
3. Rhead: Metallurgy (Longmans).

Reference.—

1. Sexton: Fuels, Furnaces and Refractory Materials (Blackie).
2. McMillan and Cooper: Electro-Metallurgy (Griffin).
3. Desch: Metallography (Longmans).
4. Wraight: Assaying in Theory and Practice (Arnold).

SYLLABUS IN ELECTRO-CHEMISTRY.

1. *Electrolysis and Electrolytic Dissociation*—

Coulometers—Theory of electrolytic dissociation. Strong electrolytes; Conductivity, Transference numbers. Electro-kinetics; Law of Mass Action applied to electrolytes (Homogenoous ionic equilibria), Indicators, Ampholytes, Electro-chemistry of gases.

2. *Electro-motive force.*—

Single electrode potential. Concentration cells. Polarisation. Accumulators. Over-voltage, PH-value.

3. *Applied Electro-Chemistry.*—

Electroplating, electro-refining and electro-metallurgy of aqueous solutions and fused electrolytes. Electrolysis of water and alkali halides. Electrolytic oxidation and reduction. Electric furnaces and furnace products. Photo-electric cells. Products of glow discharge. Electro-analysis (Potentiometric and conducto-metric).

Text-books.—

1. Creighton and Kohler: Electro-chemistry, Volumes I and II (Wiley).
2. Dole: Experimental and Theoretical Electro-chemistry (McGraw-Hill).
3. DeKay Thompson: Theoretical and Applied Electro-chemistry (Macmillan).
4. Perkin: Practical Methods of Electro-chemistry (Longmans).

Reference.—

1. Glasstone: Electrolytic oxidation and reduction (Chapman and Hall).
2. Pring: Electric Furnace (Longmans).
3. Britton: Hydrogen Ions (Chapman).
4. Kolthoff & Furmann: Potentiometric Titrations (Wiley).

SYLLABUS IN TINCTORIAL CHEMISTRY.

Development of Synthetic Dye Chemistry; Coaltar and its distillation products; classification and general characteristics of dyes and application of dyes.

Artificial colouring matters.

(*a*) Azo dyes—acid and basic.
(*b*) Triphenyl—methane dyes.
(*c*) Xanthine dyes.
(*d*) Anthraquinone dyes.
(*e*) Quinone—imine dyes, Indamines, etc.
(*f*) Quinoline dyes—carbocyanines.
(*g*) Sulphur dyes.
(*h*) Vat dyes.

Important natural colouring matters.

Anthraquinone group—Madder, Indian madder, Manjishta, Cochineal. Xanthone group—Indian yellow, Gentian root, etc. Flavone group—Morinda citrifolia, Fustic, etc. Special vegetable dyes—Indigo, Logwood, redwood, cutch, turmeric.

Analysis and Estimation of dyes.

Qualitative analysis of some common synthetic dyes.
Quantitative estimation of—

(1) a dye.
(2) the dye content of a dyed Fabric.

Text-books.—

Cain & Thorpe: Synthetic dyestuffs (Griffin).
Wahl & Atack: Manufacture of organic dyestuffs (Bell).
Perkin & Everest: Natural colouring matters (Longmans).
Fierz-David: Fundamental processes of dye-chemistry (Churchill).
Georgievics & Grandmougin: Text-book of dye-chemistry (Greenwood).
Watson: Colour and constitution.

REVISED SYLLABUS.

(NOTE.—*The revised syllabus will take effect from the examination of* 1951).

General :

Contributions of a few selected Chemists to be announced from year to year.

The contributions of the following Chemists are prescribed for 1951 :—

Rutherford, Langmuir, Bayer, Fischer, Willstatter, and Mme. Curie.

The historical development of each branch of the subject should be touched upon during the treatment.

Inorganic :

In addition to the syllabus prescribed for the B.Sc. (Pass) Main, the candidate should possess a detailed knowledge of the following portions: The Periodic table. Electronic interpretation of the table and electronic configuration of the elements. Modern conceptions of valency. Hydrogen bond. Rare gases, their production, properties and applications. Hydrogen and its isotopes. Ortho and Para hydrogen. Heavy water. Hydrides: non-metallic and metallic.

Oxides, oxyacids and oxy salts, of Sulphur, Selenium and Tellurium. Per-acids and per-salts.

Metals: Ore dressing, General methods of extraction and refining of metals. Occurrence, preparation and properties of the following: Li, Rb, Cs, Be, Ra, Tl, Ti, Th, V, Mo, W, U, and Platinum metals. Steel industry with special reference to modern methods of production of steels. Special steels. Non-ferrous alloys, Intermetallic compounds. Metal carbonyls. Co-ordination compounds. An elementary study of the chemistry of rare-earth elements.

Inorganic analysis :

Principles of qualitative and quantitative analysis. Complete analysis of the following minerals and alloys; Dolomite, Felspar, Chromite, Pyrolusite, Bauxite, and Copper pyrites. Type metal, Brass, Bronze, German silver, Cast iron and steel. Use of the following reagents: 8—Hydroxy quinoline, Dimethyl glyoxime, Cupferron. Principles of colorimetric and turbidimetric and spectroscopic methods of analysis. Elements of gas analysis.

Physical Chemistry :

Structure of the atom. Ultimate particles of matter. Radio-activity, Spontaneous, and Induced. Isotopes as indicators. Mass Spectrograph. Physical methods of determination of atomic weights. Bohr's theory of the hydrogen spectrum.

Properties of gases: Gas laws and Kinetic theory. Equations of state, Modern methods of liquefaction and attainment of low temperatures. Properties of liquids: Vapour pressure, Viscosity and Surface tension. Molecular association.

Properties of solids: Study of crystalline and amorphous media using X-rays. Properties of solutions: Determination of molecular weights. Phase rule. Derivation. One component systems (S, P, Sn). Two component systems. Simple types of three component systems.

Vapour pressure phenomena and distillation of liquid mixtures. Azeotropic mixtures. Methods of breaking up azeotropic mixtures. Industrial applications of above. Law of Mass action and its derivation. Applications of the law to homogeneous and heterogeneous systems. Kinetics of chemical reactions (thermal and photochemical). Elements of quantum theory. Relationship between physical properties and chemical constitution: Parachor Refractivity. Optical rotation, Molecular spectra, Dipole moments. Laws of thermodynamics and their simple applications to dilute solutions and chemical reactions. Specific heats of solids. Theory of electrolytic dissociation. Conductivity. Transport number. Absolute velocity. Anomalous behaviour of strong electrolytes. Solubility product. Hydrolysis of salts. Complex salts. Electromotive force; Single electrode potentials and their measurement. Concentration cells. Activity concept. Applications of E.M.F. measurements. Decomposition potential and Overvoltage. Oxidation—Reduction potentials. Red-Ox indicators.

Hydrogen ion concentration and its measurement. Acid-base catalysis.

Colloids: Preparation, properties, stability, electric charge, sols and gels. Adsorption. Applications of colloid chemistry.

Organic Chemistry.—

In addition to the course prescribed for the B.Sc. (Pass) Main, the students are expected to study the following advanced portions:—

Special types of condensations and reactions which should include the following: Friedel-Crafts reaction, Perkin's synthesis, Aldol condensation, Michael reaction, Knovenagel, Grignard, and Reformatsky reactions. Hœsch reactions. Pinacone-Pinacolin transformation. Claisen rearrangement. Fries rearrangement, Blanc reaction.

Uses of modern reagents such as selenium dioxide, lead tetracetate, per benzoic acid, per-iodic acid, selenium oxychloride, aluminium isopropoxide.

Chemistry of alicylic compounds. Baeyer's strain theory and its limitations. Strainless rings. Stereochemistry of carbocyclic compounds.

Terpenes.—Chemistry of the commoner monocyclic, bicyclic and olefinic terpenes. An elementary knowledge of sesquiterpenes with reference to farnesine and zingiberine.

Carbohydrates.—Configuration and cyclic structure of monosaccaroses. Constitution of disaccharides: Cane-sugar, Maltose and Cello-biose. Starch and cellulose. Industrial applications of starch and cellulose.

Heterocyclic compounds.—Furan, Thiophen, Pyrrol, Phthalocyanins. Indole, Indigo and Indigoid dyes. Pyrones. Coumarins. Chromones. Flavones, Flavonols, and Isoflavones. Anthocyanins with special reference to their isolation, reactions and synthesis of typical anthocyanidins like cyanidin, pelargonidin and delphinidin. Total synthesis of anthocyanins.

Pyridin, quinoline, and Isoquinoline. Acridine. Alkaloids of β phynyl ethylamine (Hordenine and Ephedrin) Alkaloids with reference to Coniine, Piperine, Atropine, Cocaine and its substitutes, Nicotine, Cinchonine, Quinine, Papaverine. Narcotine. Biogenesis of alkaloids, Fatty diazo compounds. Pyrazole, Glyoxaline, Thiazole, Oxazole and their derivatives. Pyrimidines. Purine and its derivatives (Uric acid, Caffeine, Theobromine and Theophyllin). Alpha amino acids. Polypeptides. Proteins (general treatment without reference to structure).

A general acquaintance only with the more important dye-stuffs.—

(*a*) Triphenylmethane group.

(*b*) Azo-Dyes: Laws of coupling. Preparation of Chrysoidin, Ponceaus, Congo-red, Prontosil, Ice colours.

(*c*) Phthalein dyes: Fluorescein, Eosin, and Rhodamin.

(*d*) Vat dyes of the anthraquinone series.

A general knowledge of carotenoids, and vitamins (Vitamin A, Aneurin, Ascorbic acid). Hormones: Adrenalin. Thyroxin.

General theory: Stereochemistry of carbon and nitrogen. Recent methods of resolution, Walden Inversion, Molecular rearrangements; Concept of resonance and its applications.

Practical:

Qualitative analysis: Systematic qualitative analysis of about 15 simple inorganic substances and 15 mixtures containing four to six radicals. Reactions and identification of rare elements (comprised in Fenton). Qualitative analysis of a few common alloys and ores. Preparation of a dozen inorganic substances which should include some complex salts.

Quantitative analysis.—(Inorganic):

Gravimetric.—Sensitiveness of the balance. Calibration of weights. Estimation of the following metals in solutions of their salts:—Barium, Lead, Calcium, Magnesium, Aluminium, Iron,

Chromium, Nickel, Manganese, Zinc, Tin, Mercury, Antimony, Sodium and Potassium. Use of 8—Hydroxy quinoline for estimation of magnesium, Aluminium and of dimethyl glyoxime for estimation of Nickel.

Estimation of acids: Sulphuric acid as barium sulphate, hydrochloric acid as silver chloride, and phosphoric acid as magnesium pyrophosphate.

Volumetric:

Acidimetry: Estimation of Barium. Caustic and carbonated alkali in commercial caustic soda. Estimation of ammonia in ammonium salt, direct method. Nitrogen in an organic compound by Kieldahl method. Estimation of persulphate in potassium persulphate. Sulphur trioxide content of fuming sulphuric acid. Estimation of the purity of borax.

Oxidimetry:

(a) *Involving Potassium permanganate:—*

Standardisation of permanganate using oxalic acid, sodium oxalate, and Mohr's salt. Estimation of potassium persulphate. Iron in ferric alum after reduction by (1) Zinc and (ii) Zinc amalgam. Purity of pyrolusite. Estimation of calcium and lead. Estimation of Sodium nitrite. Estimation of potassium ferrocyanide.

(b) *Involving potassium dichromate:—*
Use of external and internal indicators.
Estimation of iron in ferric alum: reduction by (i) Zinc and (ii) Stannous chloride. Iron and chromium in chrome iron ore. Evaluation of an iron ore (Magnetite or Haematite).

Iodimetry:

Preparation and standardisation of sodium thiosulphate, and iodine. Estimation of arsenious oxide in commercial samples. Copper in copper sulphate. Copper in copper coin or ore. Estimation of peroxides (Bunsen's method). Estimation of chromium in chromite.

Precipitation methods:

Argentimentry: Standardisation of silver nitrate. Estimation of chlorine, bromine and iodine in soluble salts using Mohr's indicator. Volhard's method. Use of adsorption indicators in estimating halides, Potassium chloride, bromide and iodide.

Estimation of mercury using standard thiocyanate. Estimation of phosphate using uranyl acetate. Estimation of zinc by potassium ferrocyanide (external and internal indicators).

Analysis by combined gravimetric and volumetric methods of two typical alloys and minerals:—

Alloys: Aluminium, Cupro-nickel, German silver, Gun-metal, Bronze, Brass, Solder, Typemetal, Nickel steel, Manganese steel.

Minerals:—Dolomite, limestone, zinc blende, Bauxite and copper pyrites.

Colorimetric estimation of two of the following :—
Iron (thiocyanate), Copper (Sodium tungstate), Lead (sulphide), Ammonia (Nessler).

Gas Analysis :—

Oxygen in air by (*a*) Phosphorus pipete, (*b*) Alkaline pyrogallol. Analysis of flue gas or carbon dioxide and air, Analysis of a mixture containing carbon monoxide and carbon dioxide (gases from oxalic acid). Percentage purity of ethylene prepared from alcohol and phosphoric acid. Analysis of hydrogen from the Kipp by explosion pipette. Analysis of a mixture of methane and hydrogen by fractional combustion using palladised asbestos.

Analysis of laboratory gas. Analysis of nitrate by Lunge nitrometer.

Organic :

Determination of melting and boiling points. Construction of a phase diagram. Study of azeoptropic mixtures. Organic preparations involving all the typical reactions. Reactions of organic compounds. Qualitative analysis of simple substances and mixtures (binary). Determination of equivalent weights of acids, bases and esters. Saponification and iodine values of an oil. Estimation of nitro group, methoxyl, and acetyl group in organic compounds. Estimation of carbon and hydrogen, and nitrogen by combustion.

Physical Chemistry :

Setting up a thermostat.

Determination of density, viscosity and surface tension of liquids.

Vapour density by Victor Meyer method. Molecular weights by cryoscopic and ebullioscopic methods. Determination of transition points. Critical solution temperature of phenol and water: influence of impurities on C.S.T. Atomic and molecular refractives. Polarimetric measurements: Estimation of cane sugar: Glucose and cane sugar in a mixture. Relative strengths of acids.

Spectroscopy :

Emission, spark and arc spectra. Spectroscopic detection of metals in a powder. Absorption spectrum and photography.

Thermochemistry :

Heats of solution, neutralisation and ionisation. Avidities of acids. Heats of combustion: calorific value of coal by the Bomb calorimeter and Rosenhain calorimeter. Calorific value of gas by the Simmance-Abady gas calorimeter.

Mass action :

Reaction velocity of inversion of cane sugar. Hydrolysis of methy acetate by acids, Velocity of saponification of ester by an alkali. Determination of the order of a reaction.

Partition coefficient :

Partition coefficient of iodine between benzene or carbon tetrachloride and water. Investigation of the equilibrium $KI_3 \rightleftarrows KI + I_2$ Degree of association of benzoic acid in benzene, from a study of the distribution of benzoic acid between benzene and water. Degree of hydrolysis of aniline acid hydrochloride in water.

Electrochemistry :

Preparation of conductivity water and determination of its conductivity. Cell constants of conductivity cells. Conductivity of a solution. Variation of conductivity of the solution of an electrolyte with dilution and calculation of degree of dissociation. Dissociation constant of a weak acid. Solubilities of sparingly soluble salts (barium sulphate and silver chloride). Conductometric titrations (acids and bases). Degree of hydrolysis of aniline hydrochloride by the conductivity method.

Electromotive force: Preparation of Weston cadmium cell, and the Calomel electrode. Determination of single electrode potentials. Concentration cells. Solubility of silver chloride. Ionisation constant of water.

Determination of the hydrogen ion concentration by various methods.

Degree of hydrolysis of urea hydrochloride. Transport number. Oxidation. Reduction potentials. Decomposition potential.

Electro-chemical preparations :

Potassium persulphate. Potassium chlorate. Aniline from nitrobenzene.

Chemistry (Subsidiary).

The same as for B.A. and B.Sc.—Subsidiary Chemistry.

Branch IV—Botany (Main).

A candidate shall be required to have made a comprehensive study of the following branches of Botany :—

(1) Morphology and Taxonomy of—

(*a*) Thallophytes.

(*b*) Bryophytes.

(*c*) Pteridophytes.

(*d*) Gymnosperms.

(*e*) Angiosperms.

(2) Ecological and Geographical Distribution of Phanerogams with special reference to South India.

(3) Fungi, specially with reference to their economic importance.

(4) Plant Physiology.

(5) Plant Histology.

(6) Physiological Anatomy.

(7) Palaeobotany.

(8) Cytology and Genetics.

(9) Principles of Evolution and Heredity.

(10) The chief Economic Plant Products.

Botany (Subsidiary).

The same as for B.A. and B.Sc.—Subsidiary Botany.

Branch V—Zoology (Main).

Theory :—

The course shall be the same as for the B.Sc. Pass (Zoology Main) but treated more fully. In addition, candidates shall be expected to

have made a special study of any one particular group of animals or any one of the following branches of Zoology:—

Cytology, Genetics, Histology. Invertebrate Embryology (comprising the study of the following groups—*Porifera, Annelida, Mollusca, Arthropoda* and *Echinodermata*), Animal Ecology, Marine Zoology, Entomology, Parasitology, Palaeontology and Endocrinology.

Practical:—

The practical work will not be confined to the types enumerated for the B.Sc. (Pass). Candidates may be required to dissect any of the more common type of animals included in the groups prescribed, to identify specimens with the aid of manuals, to report on zoological collections, to make microscopic preparations, to cut sections with the microtome and to show their practical acquaintance with the methods employed in studying the embryology of the chick.

Each candidate shall give notice, through his college, a year before the date of the examination, of the special subject he proposes to present.

Text-Books.

Theory:—

1. Parker and Haswell: A Text-book of Zoology—2 Vols. (Macmillan).
2. Sedgwick (A): Student's Text-book of Zoology—3 Vols. (Swan Sonnenschein).
3. Lang (A): Text-book of Comparative Anatomy—2 Vols. (Macmillan).
4. Weidersheim: Elements of the Comparative Anatomy of Vertebrates (Macmillan).
5. Graham Kerr: Zoology for Medical Students. (Macmillan).
6. MacBride (E.W.): Text-book of Embryology—Vol. I—Invertebrata (Macmillan).
7. Graham Kerr: Text-book of Embryology—Vol. II—Vertebrata (Macmillan).
8. Doncaster: Introduction to the Study of Cytology: (Cambridge University Press).
9. Lull: Organic Evolution. (Macmillan).
10. Punnett: Mendelism. (Macmillan).
11. Thomson (J.A.): Heredity. (John Murray).
12. Kellogg: Darwinism To-day. (George Bell & Sons).
13. Lock: Variation, Heredity and Evolution. (John Murray).
14. Ray Lankester: Extinct Animals. (Constable).
15. Beddard (F): Zoogeography. (Cambridge University Press).
16. Jenkinson: Vertebrate Embryology. (Oxford University Press).
17. Walter: Genetics (Macmillan).

18. Agar: Cytology (Macmillan).
19. Kellicott: Chordate Development (Constable).
20. Kellicott: General Embryology (Constable).
21. E. S. Goodrich: Studies on the Structure and Development of the Vertebrates (Macmillan).
22. Kingsley: Outlines of the Comparative Anatomy of Vertebrates (John Murray & Co.).
23. Kingsley: Vertebrate Skeleton from the Developmental Standpoint (John Murray & Co.).

Practical:—

In addition to the books prescribed for B.A. Main, the following books are recommended:—

1. Chadwick: The Marine Plankton. (University Press of Liverpool).
2. Ward and Whipple: Freshwater Biology. (Chapman and Hall).
3. Fowler Herbert: Science of the Sea. (John Murray).
4. Lee: Microtomists' Vade Mecum. (J. and A. Churchill).
5. Guyer: Animal Micrology (University Press, Chicago).
6. Carleton: Histological Technique (Oxford Medical Publications).

Reference:—

1. Ray Lankester (F.): A Treatise on Zoology—9 Parts. (A. and C. Black & Sons).
2. Cambridge Natural History—10 Volumes (Macmillan).
3. Volumes of the Fauna of British India.
4. Wilson: Cell in Development and Heredity. (Macmillan).
5. Minchin: Introduction to Protozoa. (Arnold).
6. Calkin: Biology of the Protozoa. (Bailliere, Tindall).
7. Castle: Genetics and Eugenics. (Harvard University Press, Cambridge).
8. Bateson: Problems of Genetics. (Yale University Press).
9. Ruggles Gates: Mutation Factor in Evolution. (Macmillan).
10. Charles Darwin: Origin of Species (John Murray).
11. Doncaster: Determination of Sex. (Cambridge University Press).
12. Morgan: Mechanism of Mendelian Heredity. (Henry Holt).
13. Morgan: Physical Basis of Heredity. (Lippincott).
14. Goldschmidt: The Mechanism and Physiology of Sex Determination (Translated by Dakin). (Methuen).
15. Wenyon: Protozoology—2 Vols. (Bailliere, Tyndal & Cox).
16. de Beer: Vertebrate Morphology. (Sidgwick & Jackson).

Journals.—

1. Nature.
2. Quarterly Journal of Microscopical Science.
3. Proceedings of the Zoological Society.
4. Proceedings of the Royal Society, London.
5. Philosophical Transactions of the Royal Society, London.
6. Journal of Experimental Zoology.
7. Records of the Indian Museum.
8. Memoirs of the Indian Museum.
9. Nordisches Plankton.
10. Journal of the Royal Microscopical Society.
11. Quarterly Biological Abstracts.

Practical work is expected from candidates on the Special Subject of their choice.

List o Special Subjects and Text-books

1. CYTOLOGY.

(a) *Text-books:*—

i. Cytology: Agar.
ii. Cytology: Doncaster.

(b) *Reference:*—

i. General Cytology: Cowdry.
ii. The Cell: Wilson.
iii. Section on Zoology in Piney's Recent Advances in Microscopy.
iv. General Embryology: Kellicott. (The relevant chapters).

2. GENETICS.

a) *Text-books:*—

i. Genetics: Walter.
ii. Mendelism: Punnett.

(b) *Reference:*—

i. Mechanism and Determination of Sex: Goldschmidt.
ii. Physical Basis of Heredity: Morgan.
iii. The Theory of the Gene: Morgan.

3. HISTOLOGY.

(a) *Text-book:—*

Text-book of Histology : Lewis and Bremer.

(b) *Reference:—*

i. Histology : Cajal.

ii. Essentials of Histology : Schafer.

iii. Text-book of Histology : Maximow and Bloom.

4. INVERTEBRATE EMBRYOLOGY.

(a) *Text-book:—*

Invertebrate Embryology : MacBride.

(b) *Reference:—*

Outlines of Comparative Embryology : Richards.

5. ANIMAL ECOLOGY.

(a) *Text-books:—*

i. Animal Ecology : Elton and Pearse.

ii. Animal Ecology : Russel.

(b) *Reference:—*

Ecological Animal Geography : Richard Hesse and Schmidt, etc.

6. MARINE ZOOLOGY.

(a) *Text-books:—*

i. Marine Plankton : Chadwick.

ii. Science of the Sea : Fowler and Allen. (With the omission of Chapters 1, 2, 8 and 9).

(b) *Reference:—*

i. Depths of the Ocean : Murray and Hjort.

ii. Oceanography : Bigelow.

7. ENTOMOLOGY.

(a) *Text-book:—*

Entomology with reference to Ecological aspect : Folson and Wardle.

(b) *Reference:—*

i. Cambridge Natural History Vols. Insecta.

ii. Indian Insect Life : Lefroy.

8. PARASITOLOGY.

(a) *Text-book:—*

Animal Parasitology : Hegner, Root and Augustine.

9. PALAEONTOLOGY.

(a) *Text-books:—*

i. Invertebrate Palaeontology : Woods.

ii. Text-book of Palaeontology : Swinnerton.

(b) *Reference:—*

Vertebrate Palaeontology : Romer.

10. ENDOCRINOLOGY.

(a) *Text-books:—*

i. Internal Secretion and Ductless Glands : Swale Vincent.

ii. The Endocrine Organs : Schafer.

iii. Hormones in Invertebrates : B. Hanstrom.

(b) *Reference :—*

i. Histology of the more important Endocrine Glands at various ages : E. Cooper.

ii. The Adrenals : A. Grollman.

iii. Endocrinology : Wolf, 2nd Edn., Saunders Co.

iv. Endocrine Organs in health and disease : Rolleston, 1936.

v. The Comparative Physiology of Internal Secretion : Hogben, (C.U.P.)

vi. Journal of Endocrinology. Harvard Medical School, Boston.

vii. Journal of Endocrinology. (London).

Zoology (Subsidiary).

The same as for B.A. and B.Sc.—Subsidiary Zoology.

Branch VI—Geology (Main).

Syllabus.

The course shall be the same as for the B.Sc. Pass (Geology Main) but treated more fully with the following additions :—

Mineralogy and Crystallography.—The thirty-two types of crystal symmetry, theories of crystal structure, systems of crystal notation, zonal characters, crystal projections and drawings ; twin crystals, grouping and irregularities of crystals, parting planes, percussion figures, etched figures, etc., use of the Reflecting Goniometer. General mathematical relations of crystals and measurement of crystal angles.

COURSE OF STUDY.

Description and determination of minerals by chemical and physical tests.

The chief ores and minerals of commercial value; their distribution, occurrence with special reference to Indian examples and their use; nature and structure of chief types of ore deposits.

Petrology.—The principles underlying the genesis and classification of rocks. Mechanical separation of rock constituents; examination of sands; methods of the preparation of rock sections for the microscope. Optical properties of crystals. Practical deterimination of the optical characters of the chief rock-forming minerals with the petrological microscope, including the use of convergent light. Determination of the nature and history of rocks by means of microscope.

Structural and Field Geology.—The relationships of structure of relief, drainage and economics. The composition and structure of rock masses as influencing scenery. Weathering and formation of soils. Each candidate is required to map and describe from his own personal observations the geology of an area selected by himself with the approval of the Professor.

Stratigraphy and Palaeontology.—The geological formations with their lithology, sub-divisional fossils, correlation and economics. The physical geography and vulcanicity of the different periods; general distribution of existing faunas and floras and their relation to those of former geological periods; morphological characters of the more important types of fossils; drawing of fossils; Geology of India brought up-to-date.

Text-Books.

(a) *For reading and study* :—

A. Geikie: Text-book of Geology—2 Vols.

E. S. Dana & W. E. Ford: Text-book of Mineralogy.

James Geike: Structural and Field Geology.

R. M. Chalmers: Geological Maps.

Woods: Palaeontology.

G. W. Tyrrell: Principles of Petrology.

F. H. Hatch & A. K. Wells: The Petrology of the Igneous Rocks.

F. H. Hatch & R. H. Rastall: The Petrology of the Sedimentary Rocks.

B. Stoces & C. H. White: Structural Geology.

J. Coggin Brown: India's Mineral Wealth.

D. N. Wadia: Geology of India for Students.

C. R. Longwell, A. Knopf & R. F. Flint: Text-book of Geology.

(b) *For reference and consultation.*—

Chamberlin & Salisbury: Geology—3 Vols.
Arthur Holmes: Petrographic Methods and Calculations.
A. Johannsen: Petrographic Methods.
Zittel: Palaeontology.
Ladoo: Non-metallic Minerals and Deposits.
Hobbs: Earth's Revolution and Facial Expression.
Rosenbusch & Iddings: Physiography of Rock-forming Minerals.
Memoirs and Records of the Geological Survey of India.
J. W. Gregory & B. H. Barrett—General Stratigraphy.
Bowen: Evolution of Igneous Rocks.
Harker: Metamorphism.
Lahee: Field Geology.
Bailey Wills: Structural Geology.
Tarr: Introductory Economic Geology.
Daly: Igneous Rocks and the Depths of the Earth.
Grout: Petrography and Petrology.
Swinnerton: Outlines of Palaeontology.
Thomas and Macalister: Ore Deposits.

Special Subjects.

Syllabus.

Note.—Any one of the following to be selected as a special subject.

(1) ARCHAEAN AND PRE-CAMBRIAN GEOLOGY—WITH SPECIAL REFERENCE TO INDIA.

General characteristics of the Archaeans—Bearing of the Archaean rocks on the problem of the origin of the earth—Distribution of the Archaean rocks on the Earth's surface and its significance—The Archaean rocks of India, their constitution, mode of origin and classification—Comparison with the Archaeans of other countries—The importance of the Dharwar system—Igneous rocks of the Archaean period and their relation to problems of petrogenesis.

Structural and stratigraphical relationships of the Pre-Cambrians to the foregoing Archaeans. Distribution and development of the Pre-Cambrian rocks of India, their constitution and classification with special reference to contemporaneous igneous activity. Comparison of the Pre-Cambrian rocks of India with the Proterozoic of the Lake Superior region—Life during the Proterozoic era.

Duration of time represented by the Archaean and Pre-Cambrian rocks—Economic value of the Archaean and Pre-Cambrian rocks.

(2) ECONOMIC GEOLOGY WITH SPECIAL REFERENCE TO INDIA.

A. General principles of Ore deposition, mineral paragenesis, and structural relations. A study of the following in regard to their origin, occurrence, distribution and uses :—

i. *Metallic ores* :—Gold, silver, platinum group, copper, lead, zinc, aluminium, magnesium, iron, manganese, chromium, lithium, tungsten, tin.

ii. *Fuels* :—Coal, petroleum, natural gas and oil shale.

iii. *Non-metallic or Industrial Minerals* including :— Refractories, insulating Media, abrasives, ceramic and glass-making materials, fertilisers, paints and pigments. Mica, asbestos, graphite, kyanite, sillimanite, corundum, emery, magnesite, garnet, quartz, phosphates, glass sands, kaolin and other clays, felspar, fluorspar, barytes, ochre, gypsum, sodium, potassium, magnesium salts.

iv. *Rare minerals* :—Monazite, zircon, columbite. tantalite, beryl, chrysoberyl, radioactive minerals.

v. *Building and ornamental stones and road materials*, including lime, cement and plasters.

vi. *Precious and semi-precious stones* :—diamond, ruby, sapphire, emerald, topaz, garnet, spinel, quartz, etc., and their varieties.

B. Geology of water supply—underground water, dams, resorvoirs, wells and springs.

C. General principles of study of mineral deposits including prospecting, sampling, estimation and valuation of deposits; economics of mine and quarry management aided by visits to mines and quarries.

D. Knowledge of the elements of ore microscopy and preparation of polished sections of ores and microscopic examination of coal.

E. Elementary principles of geophysical prospecting, the chief methods, their limitations and applicability to particular problems.

Books recommended for reference :—

1. W. A. Tarr : Introductory Economic Geology. McGraw Hill Book Co.
2. H. Ries : Economic Geology. John Wiley & Sons, New York.
3. C. S. Fox : Engineering Geology. Technical Press, Ltd., London.
4. Ries and Legatt : Geology and Engineering.
5. W. Lindgren : Mineral Deposits. McGraw Hill Bock Co.
6. W. Lindgren : Industrial Minerals and Rocks. Amer. Inst. Min. Eng.
7. J. C. Brown : India's Mineral Wealth. Oxford University Press.

8. Lilley: Economic Geology of Mineral Deposits. H. Holt & Co., New York.
9. Quinquennial Reviews of Mineral Production and Selected Memoirs (dealing with economic minerals) of the Geological Survey of India.
10. M. W. Von Bernewitz: Handbook for Prospectors.
11. Baxter and Parks: Mine Examination and Valuation.
12. Shaw: Geophysical Prospecting.
13. M. N. Short: Examination of Opaque Minerals (U. S. A. Bureau of Mines).

(3) PALAEONTOLOGY AND EVOLUTION.

The idea of Evolution—Significance of the facts of palaeontology in a study of evolution. The different theories of evolution like Darwinism, Lamarckism, Mutation, Orthogenesis, etc., and their discussion in the light of palaeontological studies—An examination of the theory of recapitulation—A study of the characters from time to time of the various groups of invertebrates and vertebrates so as to bring out the main trend lines of evolution—Extinct plants and problems of evolution.

REVISED SYLLABUS.

(NOTE.—The revised syllabus will take effect from the examination of 1951).

The course shall be the same as for the B.Sc. Pass (Geology—Main) but treated more fully with the following additions :—

Mineralogy and Crystallography: The thirty-two types of crystal symmetry, theories of crystal structure, systems of crystal notation, zonal characters, crystal projections and drawings; twin crystals, grouping and irregularities of crystals, parting planes. percussion figures, etched figures, etc., use of the Reflecting Goniometer. General mathematical relations of crystals and measurement of crystal angles.

COURSE OF STUDY.

Description and determination of minerals by chemical and physical tests.

The chief ores and minerals of commercial value: their distribution, occurrence, with special reference to Indian examples and their use; nature and structure of chief types of ore deposits.

Petrology: The Principles underlying the genesis and classification of rocks. Mechanical separation of rock constituents; examination of sands; methods of the preparation of rock sections for the miscroscope. Optical properties of crystals. Practical determination of the optical characters of the chief rock-forming minerals with the petrological microscope, including the use of convergent light. Determination of the nature and history of rocks by means of microscope.

Structural and Field Geology: The relationships of structure of relief, drainage and economics. The composition and structure of rock masses as influencing scenery. Weathering and formation of soils. Each candidate is required to map and describe from his own personal observations the geology of an area selected by himself with the approval of the professor.

Topographic Surveying: Introductory methods of surveying, levelling and field sketching, scales of maps and their influence on surveying methods.

Instruments—compasses, clinometers, plane tables, tacheometers, levels, barometers and theodolite.

Local topographic surveys—determining position on existing map and filling in detail in the vicinity.

Levelling and contouring—tracing the probable run of outcrops of beds, veins, etc.

Field work to comprise of: Chain surveying, compass work, plane table survey, levelling and theodolite work.

Stratigraphy and Palaeontology: The Geological Formations with their lithology, sub-divisional fossils, correlation and economics. The physical geography and vulcanicity of the different periods; general distribution of existing faunas and floras and their relation to those of former geological periods; morphological characters of the more important type of fossils; drawing of fossils; Geology of India brought up-to-date.

Economic Geology with special reference to India:—

A. General principles of ore deposition, mineral paragenesis, and structural relations. A study of the following in regard to their origin, occurrence, distribution and uses:

(i) *Metallic Ores:*—Gold, silver, platinum group, copper, lead, zinc, aluminium, magnesium, iron, manganese, chromium, lithium, tungsten, tin.

(ii) *Fuels:*—Coal, petroleum, natural gas and oil shale.

(iii) *Non-metallic minerals:* Refractories, insulating media, abrasives, ceramic and glass-making materials, fertilisers, paints and pigments. Mica, asbestos, graphite, kyanite, sillimanite, corundum, emery, magnesite, garnet, quartz, phosphates, glass sands, kaolin and other clays. feldspar, fluorspar, barytes, ochre, gypsum, sodium, potassium and magnesium salts.

(iv) *Rare minerals:*—Monazite, zircon, columbite, tantalite, beryl, chrysoberyl, radioactive minerals.

(v) *Building and ornamental stones, and road materials* including lime, cement and plasters.

(vi) *Precious and semi-precious stones:*—Diamond, ruby, sapphire, emerald, topaz, garnet, spinel, quartz, etc., and their varieties.

B. Geology of water supply—underground water, dams, reservoirs, wells and springs.

C. General principles of study of mineral deposits including prospecting, sampling, estimation and valuation of deposits; economics of mine and quarry management aided by visits to mines and quarries.

D. Knowledge of the elements of ore microscopy and preparation of polished sections of ores and microscopic examination of coal.

E. Elementary principles of geophysical prospecting, the chief methods, their limitations and applicability to particular problems.

Books for study:—

1. Unstable Earth: J. A. Steers. Methuen.
2. Principles of Physical Geology: Arthur Holmes. Thomas Nelson & Co.
3. Physical Basis of Geography (Geomorphology): Wooldridge and Morgan. Longmans.
4. Text-Book of Mineralogy: E. S. Dana. John Wiley.
5. Optical Mineralogy: A. F. Rogers and P. F. Kerr. McGraw Hill.
6. Petrology for Students: Harker. Cambridge University Press.
7. Principles of Petrology: G. W. Tyrrell. Methuen.
8. Petrographic Methods and Calculations: Arthur Holmes. Van Nostrand & Co.
9. Inverteberate Palaeontology: H. Woods. Cambridge University Press.
10. Outlines of Historical Geology: A. K. Wells. George, Allen and Unwin.
11. Geology of India and Burma: M. S. Krishnan, M.L.J. Press.
12. Economic Mineral Deposits: Bateman. John Wiley and Sons.
13. Principles of Structural Geology: C. M. Nevin. John Wiley.
14. Geological Maps: R. M. Chalmers. Oxford University Press.
15. Bulletins and Records relating to Minerals, G. S. I. Publications.
16. Engineering Geology: C. S. Fox.
17. Geophysical Prospecting: Shaw.

Books for reference :—

1. Principles of Stratigraphy : A. W. Grabau. A. G. Seler & Co.
2. Geomorphology : Von Engeln. Macmillan & Co.
3. Field Geology : F. H. Lahee. McGraw Hill.
4. Indian Mining : Dunn—M. & G. Society of India.
5. Optical Crystallography : E. Wahlstrom. John Wiley.
6. Mineral Deposits : Lindgren. McGraw Hill.
7. Economic Geology of Mineral Deposits : E. R. Lilley.
8. Interpretative Petrology : Alling, H. L. McGraw Hill.
9. Igneous Rocks and Depths of the Earth : R. A. Daly McGraw Hill.
10. Principles of Sedimentation : Twenhofel. McGraw Hill.
11. Metamorphism : A. Harker. Methuen.
12. Introduction to study of Fossils : Shimer. Macmillan.
13. Evolution of Igneous Rocks. Bowen. Princeton University.
14. Descriptive Petrography of Igneous Rocks. Johannsen Vol. I. University of Chicago Press.
15. Eruptive Rocks : S. J. Shand. John Wiley.
16. Petrology of the Sedimentary Rocks : F. H. Hatch & R. H. Rastall.
17. Exploration Geophysics : Jakosky.
18. Geophysical Exploration : Heiland. Prentice Hall.

Geology (Subsidiary).

Syllabus.

The same as for B.A. and B.Sc.—Subsidiary Geology.

Text-books.

The same as for B.Sc. (Subsidiary), *viz.*

For reading and study :—

C. Lapworth : Intermediate Text-Book of Geology.
A. Geikie : Class-book of Geology.
L. V. Pirsson and C. Schuchart : Introductory Geology.
L. V. Pirsson and A. Knopf : Rocks and Rocks Minerals.
W. W. Watts : Geology for Beginners.

Branch VII—Physiology (Main).

Syllabus.

The syllabus shall be the same as for B.Sc. Pass—Physiology (Main)—but candidates shall be required to show a more comprehensive knowledge of the subject than that required for B.Sc. (Pass) and shall be

required to have made a special study of one of the following branches of the subject:—

1. Blood and circulation.
2. Respiration.
3. Nutrition.
4. Neurology.
5. The sense organs.
6. Endocrinology.
7. Comparative Physiology.

Each candidate shall give notice, through the college, a year before the date of the examination, of the special branch of the subject he proposes to present.

Practical Biochemistry:—In addition to the syllabus laid down for the B.Sc. (Pass) in Physiology (Main), the following:—

Determination of the hydrogen-ion concentration (*a*) potentiometrically, and (*b*) by indicators. Determination of the iso-electric point of casein. Estimation of sugars polarimetrically. Preparation of typical amino-acids, *e.g.*, glycine, cystine, tyrosine and of creatine, cholesterol and glycogen, from natural sources. Analysis of milk. Estimation of sugar and urea in blood. Estimation of amino-acids by Van Slyke's method. Spectroscopic examination of blood.

Practical Histology:—The syllabus will, in addition to what is laid down for the B.Sc. (Pass), include—

Preparation of Paraffin sections, special methods of staining and identification of microscopic specimens prepared and stained by special method.

Experimental Physiology:—The syllabus will, in addition to what is laid down for the B.Sc. (Pass), include—

Demonstration of electrical changes in skeletal muscle and heart, perfusion of isolated mammalian heart, record of blood pressure in animals.

The following books are recommended in addition to the books recommended for the B.Sc. (Pass)—Physiology (Main):—

Books for study:—

1. Bayliss: Principles of General Physiology (Longmans).
2. Evans: Recent Advances in Physiology (Churchill).
3. Pryde: Recent Advances in Biochemistry (Churchill).
4. Mathews: Physiological Chemistry (William Wood, New York).
5. Wishart: Groundwork of Bio-Physics (Bell).
6. Maximow and Bloom: Text-book of Histology (Saunders).
7. Cameron: Recent Advances in Endocrinology (Churchill).

8. Cushny: The Secretion of Urine (Longmans).

9. Haldane: Respiration (Yale University).

10. Barcroft: The Respiratory Function of the Blood—I—Lessons from High Altitude, II—Haemoglobin, (Camb. University Press).

11. Bainbridge: The Physiology of Muscular Exercise (Longmans).

12. Creed, Denny, Brown, Eccles, Liddell and Sherrington: Reflex Activity of the Spinal Cord (Oxford Univ. Press).

13. Lusk: Science of Nutrition (Saunders).

Books for reference:—

1. Luciani: Human Physiology (Macmillan).

Vol. 1. Circulation of Respiration.

2. Internal Secretion, Digestion, Excretion. The Skin.

3. Muscular and Nervous Systems.

4. The Sense Organs.

5. Metabolism, Temperature, Reproduction, etc.

2. Fulton: Muscular Contraction and the Reflex Control of Movement (Bailliere, Tindall & Cox).

3. Foster: History of Physiology (Camb. University Press).

4. Du Bois, E. F.: Basal Metabolism in Health and Disease (Bailliere, Tindall & Cox).

5. Thomas Lewis: The Blood Vessels of the Human Skin and their Responses (Shaw & Sons).

6. Krogh: The Anatomy and Physiology of the Capillaries (Yale).

7. Eric Ponder: Essentials of General Physiology (Longmans).

8. Robson: Recent Advances in Sex and Reproductive Physiology (Churchill).

9. Grollman: The Cardiac Output of Man in Health and Disease. (Thomas, Baltimore).

10. Wiggers: The Pressure pulses in the cardio-vascular system (Longmans).

11. Cannon: Bodily Changes in Pain, Hunger, Fear and Rage (Appleton).

12. Bayliss: The Vaso-motor System (Longmans).

13. Kuntz: The Autonomic Nervous System (Bailliere, Tindall & Cox).

14. Liddell and Sherrington: Mammalian Physiology (Oxford University Press).

15. Parkes: The Internal Secretions of the Ovary (Longmans).

16. Bayliss: Enzymic Action (Longmans).

17. Hawk: Practical Physiological Chemistry (Churchill).

18. Lee: The Microtomist's Vade-Mecum (Churchill).

19. Guyer: Animal Micrology (Chicago University Press).

20. Carleton: Histological Technique (Oxford University Press).

References for Special Subjects.

Blood.

1. Eric Ponder: The erythrocytes and the action of simple Haemolysins (Oliver and Boyd).

2. Piney: Recent Advances in Haematology.

3. Henderson: Blood (Yale).

Nutrition.

1. Hutchison: Food and the Principles of Dietetics (Arnold).

2. Macleod: Carbohydrate Metabolism and Insulin (Longmans).

3. Browning: The Vitamins.

4. Cathcart: The Physiology of Protein Metabolism (Longmans).

5. McCallum and Simmonds: The newer knowledge of Nutrition (Macmillan).

Neurology.

1. Gaskell: The involuntary nervous system (Longmans).

2. Tilney and Riley: The form and the functions of the Central Nervous System (Lewis).

3. Brain and Strauss: Recent advances in Neurology (Churchill).

4. Adrian: The basis of sensation (Norton & Co.).

5. Adrian: The Mechanism of Nervous Action (Pennsylvania University).

6. Hill: Chemical wave transmission in Nerve (Macmillan).

7. Pavlov: Conditioned Reflexes (Oxford University Press).

8. Ranson: The anatomy of the Nervous System (Saunders).

Endocrinology.

1. Dodds and Dickens: The Chemical and Physiological Properties of the internal secretions (Oxford University).
2. Harrington: Thyroid gland, its Chemistry and Physiology (O.U.P.).
3. Cushing: The Pituitary body, hypothalamus, and parasympathetic Nervous system (Thomas—Illinois).
4. Allen: Sex and internal secretions (Williams and Wilkins).
5. Sharpey-Schafer: The Endocrine organs, Parts I and II (Longmans).
6. Swale Vincent: Internal secretions and the ductless glands (Arnold).
7. Cramer: Fever, Heat Regulation, Climate and the Thyroid Adrenal Apparatus.

Sense Organs.

1. Adler: Clinical Physiology of the Eye (Macmillan).
2. Hecht: The Retinal processes concerned with visual acuity and colour vision (Harvard University Press).
3. Parsons: Introduction to colour vision (Cambridge).
4. Fletcher: Speech and Hearing (London).
5. Wilkinson and Gray: The mechanism of the Cochlea (London).
6. Camis: The Physiology of the Vestibular apparatus (Oxford).
7. Beatty: Hearing in Man and in Animals (Bell).
8. Parker, G. H: Smell, Taste and the allied senses in the Vertebrate (Philadelphia and London).

Comparative Physiology.

1. Woodger: Elementary Comparative Morphology and Physiology (O.U.P.).
2. Ritchie: The Comparative Physiology of the Muscular Tissue (Camb. Univ. Press).
3. Hogben and Winten: An introduction to comparative Physiology (Collins).
4. Hogben: Comparative Physiology (Sidgwick & Jackson).
5. Clark: Comparative Physiology of the Heart (Cambridge).
6. de Beer: The comparative Anatomy, Histology and Development of the Pituitary body (Oliver & Boyd).
7. Hogben: Comparative Physiology of Internal Secretions (Camb. University Press).

Journals.

1. Journal of Physiology.
2. American Journal of Physiology.
3. Physiological Abstracts.
4. Physiological Reviews.
5. Quarterly Journal of Experimental Physiology.

6. Journal of General Physiology.
7. Journal of Nutrition.
8. Journal of Endocrinology.
9. Biochemical Journal.
10. Journal of Biological Chemistry.
11. Brain.

Physiology (Subsidiary).

The same as for B.Sc. (Pass)—Subsidiary.

Text-books for the B.Sc. (Hons.) Degree Examination.

PART I—ENGLISH.

1949.

Prose-Detailed :—

1. Arnold—Selections, Ed. Campagnac, (Macmillan).
2. Longer Specimens of Modern English Prose, omitting *De Senectute* (O.U.P.).

Non-detailed :—

1. Trollope: The Last Chronicle of Barset.
2. Modern Short Stories—Scholar's Library, (Macmillan).
3. J. S. Hoyland: Gopal Krishna Gokhale, (Y.M.C.A. Publishing House, Calcutta).

1950.

Prose-Detailed :—

1. Carlyle—Selections from the French Revolution. Hemingway and Seymour. (D. C. Heath & Co.).
2. Longer Specimens of Modern English Prose omitting *De Senectute* (O.U.P.).

Non-Detailed :—

1. Thackeray: Esmond.
2. M. R. Ridley: Abraham Lincoln (Blackie & Son).
3. Tagore: Home and the World (Macmillan).

1951.

Prose-Detailed :—

1. Carlyle—Selections as for 1950.
2. Jepson—More Modern Essays (Longmans).

Non-Detailed :—

1. Hardy—Far from the Madding Crowd.
2. Sir Richard Livingstone—Some Tasks for Education (O.U.P.)
3. Sardar K. M. Pannikkar—A Survey of Indian History (The National Information and Publications, Ltd., Bombay).

APPENDIX VII.

M.Sc. DEGREE EXAMINATION.

SYLLABUSES.

Physics.

SYLLABUS, LIST OF EXPERIMENTS AND TEXT-BOOKS.

1. Paper I.

A. *Vector Analysis.*—Addition, Multiplication, differentiation. Vector operators, Vectorial methods applied to mechanics—Integral theorems—Gauss, Stokes, Green and their applications in optics and electricity—Dyadics and Tensors—Generalised co-ordinates, Lagrange's Equation, Hamilton's Equations, Calculus of variations.

B. *Statistical Mechanics.*—(1) Classical (Boltzman's) Statistics (2) Bose-Einstein Statistics—Application to a gas, to a photon gas. Planck's formula. (3) Fermi-Dirac statistics—Optical, magnetic and thermal properties of an electron gas: Electronic structure of metals (Brillenin Zones in crystals, Metals, semi conductors and insulators: Photo conductivity, Alloys, Order, Disorder phenomena; Supra conductivity.

C. *Relativity.*—Optical Phenomena associated with motion through ether: aberration of light, Airys water-telescope Frensnel-Fizeau ether drag, the Michelson Morley Experiment. Electro dynamics of moving bodies: the experiments of Rowlands, of Treuton and Noble and others. The fundamental postulates of the Special Theory of Relativity: Lorentz-Einstein Transformation: Fitzgerald-Larmer contraction; Einstein time dilatation: addition of velocities. Minkswskis four dimensional world: World-vectors. Generalised expression for Newton's second law of motion: variation of mass with velocity; the inertia of energy. Relativistic invariant form of the electromagnetic equations. Elements of the General Theory of Relativity.

D. *Wave-Mechanics.*—In addition to the elementary study in Honours—The Kepler problem; the wave-mechanics of the hydrogen atom. Theory of perturbations and its simple applications; Zeeman effect of the hydrogen atom; Heitler-London model of the hydrogen molecule Theory of dispersion, negative dispersion terms. The helium problem; resonance. Transition probabilities. Selection rules.

Elementary treatment of systems of identical particles. Symmetric and anti-symmetric states. Elementary ideas of Dirac's theory of radiation.

Elements of Dirae's theory of the electron; the spin of the electron; negative energy states; creation of electron pairs.

E. A more detailed study of Nuclear transformations and Cosmic Rays.

Text-Book: "Theoretical Physics" by Georg Joos translated by Ira M. Freeman (Blackie & Son).

2. Paper II.

Any one of the following special subjects :—

(*a*) X-RAYS.

Production of X-rays; typical modern outfits used in research, industry and medical practice. High voltage technique, transformers, measurement of high voltages, etc. Elements of industrial and medical radiology.

X—ray scattering by atoms and by simple molecules in relation to their structures; structure factor; distribution of electron density, X-ray scattering by gases, liquids and glasses. Compton scattering; scattering of X-rays; Klerin-Nishina formula. Photo-electrons and their special distribution in space.

Experimental methods in X-ray spectroscopy: Focussing spectrograph, Double crystal spectrometers. Refractive index for X-rays. Measurement of "e" by X-ray methods.

X-ray absorption and emission spectra; influence of chemical binding and of the electronic energy levels in crystals; X-ray spectra in relation to the extra-nuclear structure of atoms; comparison with optical spectra.

External symmetry of crystals, the crystallographic system, pin point-groups, internal symmetry, space-groups. Methods of crystal analysis (Bragg, Lane, Debye-Scherrer, Rotation, Weissenberg and Schiebold, Sauter methods). Measurement of absolute intensities of X-ray reflection by crystal planes, structure factor of crystal planes. Fourier methods of mapping electron density in crystals. Structures of some simple typical organic and inorganic crystals, metals and alloys, superlattices. Diffraction of electrons.

Electron diffraction methods and their application to the study of the structures of thin films. Effect of thermal agitation on X-ray reflections. Order, disorder phenomena in alloys.

List of Experiments.

1. Refraction and reflection of X-rays.
2. Absorption co-efficient of X-rays.
3. Change in the hardness of X-rays on scattering.
4. Verification of Moseleys law.
5. Short wave-length limit of the continuous spectrum from an X-ray tube.

6. Absorption edges.
7. Goniometric measurements on typical crystals and the calculation of the axial angles and ratios.
8. Rotation photograph of a cubic crystal and the analysis of its structure.
9. Diffuse X-ray reflections accompanying the Laue spots.
10. X-ray diffraction with a bent crystal.
11. The study of soft X-rays with a vacuum grating spectrograph.
12. X-ray diffraction by liquids.

General Reference Books.

Clark: Applied X-rays.

Bragg and Bragg: Crystalline state.

Compton and Allison: X-rays in Theory and Experiment.

Davey: A story of crystal structure and its applications.

(*b*) WIRELESS.

Network theorems; T and TT networks, Series parallel and multiple resonances; sharpness of resonance. The infinite line. Wave motion on lines with and without dissipation; line with distributed constants; reflection on lines. General equations for transmission of waves on lines. Theory of simple electric filters of the constant K type and of attenuators. Simple coupled circuits and impedance transformation.

Properties of coils and condensers. Resistances of coils at radio frequencies; skin effect; properties of iron core coils; their A.C. inductances when D. C. is superimposed; incremental permeability: electrolytic and other types of condensers.

Physics of thermionic tubes; various types of tubes; their constants and uses.

Audio frequency amplifiers—Resistance coupled, transformer and impedance coupled amplifiers; classes A and B and push pull amplifiers; direct-coupled and feed-back amplifiers. Input impedance of a triode.

Radio frequency oscillators and amplifiers. Untuned and tuned amplifiers for reception; neutralization circuits and their adjustments.

Power amplifiers:—Classes A, B and C. Crystal oscillators and other frequency stabilization devices; ultra high frequency oscillators—the magnetron and the Barkhausen-Kurtz types.

Modulation:—Methods of modulation; simple amplitude and simple frequency modulations.

Vacuum tube detectors:—Plate, grid, power, hetrodyne, regenerative and super-regenerative detectors, Vacuum tube voltmeter.

Radio reception. Modern superhet receiver and its performance. Automatic volume control and tone control. Simple theory of loud speakers.

Simple television ; receiving and transmitting systems.

Antenna systems and propagation of radio waves :—Current and voltage distribution in an antenna. Theory of radiation. Distribution and field around a vertical antenna. Directional antennas, loop antennas and radio direction finders. Antenna arrays. Theory of the ionosphere ; skip distance, echoes and fading.

Practical course in Wireless.

List of Experiments.

1. Resistance measurement of radio frequency circuits.
2. Determination of the characteristics of a multistage audio-frequency amplifier.
3. Study of a vacuum tube detector.
4. Current voltage relationship in a rectifier filter system.
5. Determination of the performance of a receiver.
6. Measurement of antenna characteristics.
7. Measurement of field strength.
8. Measurement of radio frequencies.
9. Measurement of audio frequencies.
10. Determination of the constants of an audio frequency transformer.
11. Measurement of Q of an inductance.
12. Study of a radio-transmitter.
13. Production and study of ultra-high frequencies.

(c) SPECTROSCOPY.

In addition to the B.Sc. (Honours) portion in the subject :—

Spectrum of the Hydrogen atom, of alkali elements, Boron group of elements ; Selection rule for doublets. Interaction between orbital and spin moments, Irregular doublet laws ; Fine structure of spectral lines ; Sommerfields and Spinning electron theory ; Zeeman effect in complex spectra.

Laude 'g' factors, calculation of Zeeman patterns, Paschen-Back effect of complex spectra. Stark effects, theory, Iso-Electronic sequences.

Arc and spark spectra—mode of excitation. Width of spectral lines—Natural, Doppler, Stark effect. Pressure broadening Hyperfine structure—experimental methods and precautions. Nuclear spin and isotopic effect. Nuclear structure from Hfs. Quadrupole moments. Molecular spectra—Diatomic molecule.

Rotation, vibration and electronic bands—Intensities—Franck-Condon principle. Predissociation. Isotope effect. Molecular electronic levels—Hundis coupling cases (Wave mechanical theory of the diatomic molecule).

Polyatomic molecules—Infra-red spectra—Vibrations of poly-atomic molecules—Spectrographs and high resolving power instruments. Prism and grating spectrographs; vacuum spectrographs. Infra-red spectroscopy.

Forbidden lines.—Experimental investigations: Astro-physical significance. Intensities of spectral lines. Spectro-photometry theory.

Saha's theory of ionisation and its astro-physical application.

Miscellaneous :—

1. Resonance radiation—depolarisation.
2. Metastable states.
3. Life of atoms in excited states.
4. Light of the Night-sky.
5. Stellar classifications.
6. Wave-length standards.

List of Experiments.

1. Michelson's Echelon.
2. Fabry Prot—(Photogr ;phic and visual).
3. Lummer plate.
4. Zeeman effect.
5. Raman effect.
6. Arc and spark spectrograph.
7. Concave grating (Rowland and Eagle mounting).

General Reference Books :—

1. White.
2. Ruark and Urey.
3. Pauling and Gendsmit.
4. Sommerfield.
5. Candler.
6. Jevens report.
7. Williams interferometry.
8. Baly.
9. Bhagavantham.
10. Dingle—Astro-Physics.

(d) PHYSICS OF SURFACES.

1. The properties of liquid surfaces.
   Spontaneous contraction of liquid surfaces.
   Molecular theory—free energy of the surface.
   Degree of definition of a liquid surface.
   Interface between two liquids—Adhesion—cohesional work.
   Thermodynamics of the liquid surface.
   Curved surfaces.

2. Surface films of insoluble substances.
   Monomolecular films—surface pressure.
   Langmuirs work—Molecular orientation and structure of surface films.
   Experimental methods of measuring surface pressure, and surface potential—ultra-microscopic methods.
   The main types of films—Gaseous, Condensed, Expanded, Liquid expanded and liquid and their theory.
   Properties and structure of molecules as determined from surface films.
   Chemical reactions in surface films.
   Applications of the theory of surface films.

3. Suface films of soluble or volatile substances; Adsorption at liquid surfaces.
   Gibbs adsorption equation and its verification.
   Adsorption on dilute solutions—Traubes rule.
   Adsorption in concentrated solution.
   Solutions of soaps and colloidal electrolytes.
   Adsorption from vapours and organic solvents.
   Adsorption at interface between liquids.
   Stability of isolated liquid films—soap films—emulsification.

4. Surface tension and its measurement.
   Eotvos law—Kinetic theory of the surface—Suface tension of metals—Sugdens "parachor"—Effect of pressure on surface tension.
   Capillary height method—Bashforth and Adams corrections—variations of the method. Maximum bubble pressure methods.
   The drop volume method and its refinements.
   Other methods based on the fundamental equation. Determination from the spreading power of oils. Dynamic methods. Ripples, jets drops—Measurement of S. T. of molten metal. Measurement at interface between two metals.

5. General properties of solid surfaces.
   The nature of the solid surface and its consequences.

Polishing and surface working of solids. Work of adhesion between solids and liquids—contact angles—Hysterisis of contact angles.

Conditions determining the contact angle—Contact angles of powders—flotation process, wetting powder—Emulsification by solid powders.

6. Spreading of liquids on surfaces; Lubrication.

Conditions and mechanism of spreading—Friction and seizure of clean surfaces. Lubrication—Boundary lubrication—Factors governing lubrications.

7. The structure of solid surfaces: Adsorption and catalysis.

Heterogeneity of solid surfaces—composite surfaces—Pro-motor action.

One dimensional surfaces—Effect of surface cracks. True area of solid surfaces. Adsorption on crystal faces. Experimental method.

The Adsorption isotherm—Activated adsorption. Chemical reaction in adsorbed layers—Catalysis. Properties of charcoal. Surface-effects in photographic emulsions—Enzyme action. Effect of surface tension on the surface of crystals.

8. Electrical phenomena at interfaces:

Potential difference between two phases.

Phase boundary potentials and double layers. Thermionic function and contact potentials. Polarisation and over-potentials.

S. T. of charged surfaces. Electrocapillary curve. Electrokinetic phenomena. Electrification and stability of air between liquid surfaces.

9. Colloidal phenomena.

The disperse state of matter—diffrom states.

Production and the peculiarities of the colloidal state.

Kinetics of colloidal particles. Electrical properties of colloidal systems—Surface phenomena in colloidal systems.

Protection and sensitisation of colloidal systems. Dispersion, coagulation and dissolution. Particle shape and the optical properties of colloidal systems—Aggregates bended primary and secondary forces—colloidal aggregates.

List of Experiments.

Surface pressure by Adam and Jessops film balance.

Verification of the relation FA-KT for gaseous films.

Curve of FA and F for gaseous films (fatty acids on N/10 alkali).

Curve of F against A for coherent films (higher aliphatic acids).

Pressure area curve for condensed films (Oleic acid on dil, HCL).
Surface compressibility of condensed films.
Determination of area per molecule from surface pressure measurement.
Pressure curve for expanded films (fatty acids).
Measurement of spreading pressure of solid oleic acid.
Relation between spreading pressure and temperature.
Measurement of surface potential—use of calomel and polonium electrodes and the Lindemann electrometer.
Measurements of surface potential by Porters method.
Variation of surface potential in different regions for coherent films.
Examination of coherent films by dark ground illumination.
Variation of surface potential with pH of substrate.
Measurements of contact angle—plate method—cylinder method.
Bosanquet and Hartleys method for small contact angles.
Taggarts bubble method—Warks method.
Capillary method—Quincks method.
Effect of surface layers on contact angle.
Surface tension by capillary height method—Bashforth and Adams correction tables.
Ferguson and Dowsons compensation method.
Fergusons micro method.
Maximum bubble pressure method—correction for bubble shape.
Sugdens differential method—Variation of S. T. with temperature.
Drop volume method—Harkins and Browns corrections.
Ring methods—Harkins and Jordans corrections.
Adams method for S. T. by the spreading power of oil.
Surface tension by ripples, oscillating jets, and stationary waves on a jet.
Interfacial tension by ring, capillary height and drop weight.
Harkins and Andersons vertical plate method for surface pressure.
Measurement of surface viscosity by Jolys surface slot viscometer.
Formation of multilayers by dipping technique.
Determination of thickness of multilayer by interference and calculation of thickness of monolayer.
Co-efficient of friction with lubricants, Hardys method.
Measurement of heat adsorption—Oxygen on charcoal and oxygen on platinum black.
Adsorption of hydrogen on Tungsten wire (Roberts micro method with Pirani gauge).
Heat of adsorption on Tungsten wire (Roberts method).
Rate of adsorption of oxygen on charcoal.
Determination of overpotentials—variation with current density—verification of Tafels equation.

True area of a solid surface by Bowen and Rideals overvoltage method.

Capillary electrometer—the electrocapillary curve.

Velocity of electrokinetic motion—direct method—Sumner and Hennys method.

Measurement of streaming potential.

Measurement of contact potentials and electrode potentials.

Ultra centrifuge separation of colloids—particle size.

Micro-methods for particle size.

Estimation by adsorption methods.

Surface tension of solutions; finding area per mol. using Gibbs equation.

Variation of S.T. with concentration.

Verification of Traubes rule.

Sawais method for the surface potential of solutions.

Frumkins method for the surface potential of salt solutions.

Hardys method for the stability of liquid films.

Relation between stability and surface concentration (Amyl alcohol and soaps).

Work of adhesion from surface tension measurement and Dupre equation (drop weight method).

Work of cohesion from surface tension measurement.

Use of ellipticity of reflected light to detect heterogeneity of films.

General Reference Books (Theory and Practice) :—

The Physics and Chemistry of Surfaces by N. K. Adam and references to original papers where necessary as given in the above book.

Adsorption by C. L. Mantell.

Crystal Structure and its Applications by Davey (for the effect of S. T. on crystal structure).

(e) NUCLEAR PHYSICS AND COSMIC RAYS.

The general reference for the topics shall be the work reported in "The Review of Modern Physics" and the "Physical Review" (America).

Chemistry.

Organic Chemistry :—

General and Theoretical:

1. Reaction mechanisms: Esterification and hydrolysis. Condensation and alkylation. Rearrangements (Hofmann-Wolff, Wagner-Meerwein, Hofmann-Martius, Walden, Fries Claisen). Orthoeffect. Strength of organic acids and bases, Hologenation, Sulphonation, Carboxylation. Peroxide effect, Polymerisation, Displacement, Enolisation, Carbonyl addition, Carbomium ion. Hydrogen bond.

2. Electronic theory and resonance in organic chemistry.
3. Unsaturation.
4. Free radicals.
5. Organo-metallic compounds.
6. Tautomerism.
7. Stereochemistry of cyclic compounds. Methods of resolution.

Natural and synthetic products:

8. Sex hormones: Follicular, Corpus Luteum, and Adrenal Cortex.
9. Vitamins including Biotin.
10. Carbohydrates: Disaccharides and polysaccharides and allied substances like Pectins, gums and mucilages.
11. General knowledge of polyterpenes.
12. Natural quinone pigments.
13. General methods of study relating to:—
    (*a*) Plant pigments like anthocyanins and Chlorophyll.
    (*b*) Haemoglobin and Bilirubinoids.
    (*c*) Synthetic pigments: Phthalocyanins.
14. Naturally occurring Furano and Pyrano compounds (General).
15. Alkaloids: The Lupin group, Quinine group, Emetine, Corydalis alkaloids, Morphine, Codeine, Thebaine, Colchicine, Sinomenine, Steroid and polyterpenoid bases. Ergot sikaoids. Senico alkaloids.
16. Organic arsenicals.
17. Sulphonamides and natural and synthetic antibacterials.
18. Nucleic acids.

The student is expected to be familiar with current literature by following the Annual Reports.

Practical:

Preparations illustrative of the application of Grignard, Reformatsky, Claisen, Hoesch-Houben, Perkin, Knovenagel, Hantsgh (Pyridine synthesis), etc. Use of new reagents; Metal alkoxides, Selenium dioxide, Lead tetracetate, Perbenzoic acid, Diazo-methane, Biochemical preparations. Extraction of natural products and their isolation. Molecular rearrangements: Bezidine, Beckmann, Fries and other transformations. Resolution of externally compensated optically inactive compounds.

Quantitative:

Estimation of keto, hydroxyl, acetyl, Methoxyl, nitro, and diazo groups in organic compounds. Estimation of primary and secondary amines in a mixture. Estimation of primary amines using R-salt.

Semi-micro methods for the quantitative determination of Carbon, hydrogen, nitrogen and halogen content of organic compounds.

Physical Chemistry :

The Atomic Concept of Matter. Radioactivity and Nuclear Reactions.

Spectroscopy : Quantum Theory of Atomic Spectra. Molecular Spectra and Molecular Structure. Quantum Theory of Valency.

The Methods of Willard Gibbs and of Darwin and Fowler.

The laws of Thermodynamics. Solid State of Matter.

Phase Equilibria. Chemical Equilibria and Chemical Kinetics.

Surface Chemistry. Colloid. Electro-chemistry of Aqueous, Non-aqueous solution and of Melts. Large Molecules.

Practical :

The practical examination will deal with the application of Physical methods in the study of inorganic and organic compounds.

The scope of the topics will be that covered in the following books :—

Moelwyn Hughes : Physical Chemistry (C.U.P.)

Bowden : Phase Rule and Phase Reactions.

Hinshelwood : Kinetics of Chemical Change (O.U.P.)

Pease : Equilibria and Kinetics of Gas Reactions (Princeton O.U.P.)

Adam : Physics and Chemistry of Surfaces (O.U.P.)

MacInnes : Principles of Electro-chemistry (Reinhold).

Falkenhagen : Electrolytes.

Advances in Colloid Science edited by Kraemer, Vol. I.

Burk, Mark and Whitby : High Polymers.

Harned : Physical Chemistry of Electrolytic Solutions (Reinhold).

Weissberger : Physical Methods of Organic Chemistry, Vols. I and II (Interscience).

Biochemistry :

I. Physical chemistry of living tissues—colloidal phenomena permeability of membranes. Acid base equilibria with special reference to weak acids and ampholytes.

II. Chemistry of the following groups of substances :—

Proteins, fats and carbohydrates.

Purines, pyrimidines and nucleic acids.

Sterols, bile acids and related compounds.

Plant and animal Pigments related to porphyrins.

III. Enzymes :

Chemistry and mode of action of enzymes.

Hydrolases—Amylases, lipases, proteases.

Desmolases—Theories of oxidation and reduction.

Dehydrogenases, oxidases, peroxidase, catalase.

IV. Vitamins and Harmones.

Chemistry, physiological function, chemical and biological assay.

V. Biochemistry of the following processes :—

Absorption of minerals by plants.

Digestion and absorption in animals.

Energy metabolism in animals.

Mineral, fat, protein, and carbohydrate metabolism in micro-organisms, plants and animals.

Muscle contraction, respiration, alcoholic fermentation.

VI. Biochemistry of the following tissues and organs—

Blood, liver, brain.

VII. Industrial fermentations.

Yeast fermentations—Alcohol, glycerine, food yeast.

Bacterial fermentations—Acetone-butanol, acetone-ethanol, butyl alcohol, isopropyl alcohol, acetic acid, lactic acid, sorbose.

Mould fermentations—Citric, gluconic and kojic acid.

Practical Work.

Analysis of water, sewage, soils and manures, foods and feeding stuffs.

Use of colorimetric, polarimetric and spectrographic methods of analyses.

Determination of trace elements.

Determination of starch, sugars (monosacharides including pentoses and disaccharides), protein, fat.

Analysis of normal constituents of blood (haemoglobin, blood sugar) and urine (urea, uric acid, creatinine).

Preparation of starch, glucose, prolamine from wheat, or ragi, casein and lactose from milk, edestin or other globulin, choline, cholesterol, mixed fatty acids from a vegetable oil, glutamic acid, cystine, tyrosine, arginine, glycine, haemin.

Enzymes :—Preparation of amylase, lipase, pepsin, trypsin, erepsin.

Quantitative study of hydrolysis by the above enzymes.

Succinic dehydrogenase.

Study of tissue oxidations by the Thumberg methylene blue technique and with the Warburg manometer.

Botany.

The course for the M. Sc. Degree by Examination will include a comprehensive knowledge, with recent developments, of the following branches of study :—

1. *Plant Pathology*:

(i) History of plant pathology.

(ii) Causes and symptoms of diseases in plants.

(iii) Dissemination of plant diseases. Effect of environment.

(iv) Isolation and pure culture studies of organisms causing plant diseases.

(v) Diseases due to Bacteria. *Phytomonas citri*, *P. Solanacearum*, *P. malvacearum*.

(vi) Diseases due to Fungi.

(*a*) Phycomycetes *e. g.* club root of cabbage, *Rhizopus nigricans*, *Phytophthora palmivora* and *Phythium aphanidermatum*.

(*b*) Ascomycetes—Powdery mildew on cereals (*Erysiphe*) *Levellula taurica*.

Claviceps on rye and wild grass.

Phyllachora cynodon and *Leptosphaeria sacchari*.

(c) Basidiomycetes—*Sphacelotheca Sorghii puccinia ruelliae P. Graminis*.

(*d*) Fungi Imperfecti—*Fusarium* moniliform Piricularia orizae.

Colletotrichum falcatum, *septoria Thespesiae*.

(vii) Diseases due to Plant viruses.

Symptomological—A. External, B. Internal.

Methods of transmission of viruses.

Detailed study of the following viruses :—

A. Stable viruses—Tobacco mosaic virus.

B. Unstable viruses—Potato mosaic.

C. Insect transmitted viruses-Little leaf disease of brinjal.

Relation between viruses and insect vectors. Virus strains, mutation and acquired immunity. Methods and properties of purified virus preparations.

(viii) Principles of plant protection.

2. *Hydrobiology and Ecology*:—

A. Hydrobiology:

(i) Fresh water environments: (*a*) Physical condition.

(*b*) Chemical condition.

(ii) Lakes and their origin.

(iii) Biological relations: Influence of physical and chemical conditions.

(iv) Organisms in inland waters: Plankton algae.

(v) Higher aquatic plants and their limnological significance.

(vi) Benthic forms.

(vii) Flora of ponds, bog lakes and running waters.

B. Ecology :—

(i) Methods of study of vegetation.

(ii) Units of vegetation.

(iii) Plant succession.

(iv) Aggregation, Migration and Ecesis.

(v) Competition, Invasion, Reaction and Stabilisation.

(vi) Soil and its environment

(*a*) of aerial parts of plants,

(*b*) of underground parts.

(vii) Climax formations.

3. *Cytology and Genetics* :—

A. Cytology :

(i) Intense study of cell and its parts—Mitochandria, Golgi apparatus, Chromoidal substances, etc.

Nucleolus, its origin, function and significance.

Somatic and Meiotic Chromosomes: their morphology.

Theory of permanance and Chromosome individuality.

Geneotypic and Structural changes. Movements of Chromosomes and theories thereof.

(ii) Polyploidy and Polyploid tissues—Methods of inducing.

Polyploidy—Colchicine and X-ray treatments.

Polyploidy and its evolutionary significance. Meiosis in Polyploids (auto and allo).

Chiasmata formation—Multivalents.

Disjunction—Secondary association and its significance.

Meiosis in different types of hybrids.

Translocation, Segmental interchange. Catenation and the nature of disjunction with such forms as *Oenothera*.

Inheritance in Polyploids. Asynapsis, allosyndesis and autosyndesis. Haploids and their cytology—crossing over and its significance—cytological evidence of crossing over. Inversion hybrids—Bridge formation—Linkage maps. Heterochromation and differential condensation. Inert regions of chromosomes as in *Maize*.

(iii) Cytology of Monosomics, Trisomics, Tetrasomics, etc., and their mutation.

(iv) Sex chromosomes, their behaviour in cell division. Evolution of X and Y types.

(v) Sterility and Apomixis—Polymitosis.

(vi) Chromosome Structure and Mechanics.

B. Genetics :

(i) Inheritance in diploids, generic characters, Certation—Incompatibility, Factor interaction. Xenia, Lethal factors—Variegation—Extra nuclear inheritance.

(ii) Chromosome theory of heredity in all its aspects. Percosity theory of Meiosis—Genetical maps and their comparison with Cytological chromosome maps.

(iii) Constitution of the factor. Presence and absence hypothesis. Eyster's genomeric hypothesis. Mutable genes. Step allelomorphs. Thomson's Side-Chain hypothesis—Goldschmidt's physiological hypothesis. Fischer's theory of dominance.

(iv) Inheritance in Autotetraploids, Allopolyploids, Euploids and Aniploids.

(v) Detailed study of some well-known structural hybrids *Zea Pisum*, *Oenothera*. Factor complex theory—Lethal factors—Balanced lethal mechanism—Half mutants and mass mutants.

(vi) Interspecific hybridisation—*Galleopsis*, *Triticum*, *Crepis*—*Viola*, etc.—and species problem.

(vii) Methods of plant breeding—their role, value, genetics and technique.

NOTE :—The written papers will comprise the following subjects:
Written Paper I—Plant Pathology and Hydrobiology.
Do. II—Cytology, Genetics and Ecology.

Practical :

A. Students are expected to make stained preparations of diseased materials ; to have practice in the technique of culturing micro-organisms ; to conduct pathogenicity tests with micro-organisms in respect to their individual hosts—Detailed practical study of the host parasite relationship.

B. Practice in the collection and identification of Plankton organisms both fresh water and marine.

Field study of the ecological distribution of aquatic floras with particular reference to succession of floras in rain water pools.

Field study of the factors concerned in the distribution of marine floras in any one locality.

Field study of Angiospermic vegetation of any locality with special reference to the various standard methods used in such studies —(Herbarium of the floras of the surveyed locality to be maintained and submitted at the examination).

C. Preparations showing all the important stages in Mitosis and Meiosis. Preparations showing morphology of chromosomes—Smear Preparations. Preparations stained in Feulgen's re-agent. Preparations showing secondary associations. Preparations showing ring formation as in anther of *Notonia*, *Hypericum* *Oenothera* species.

Candidates are required to submit for scrutiny at the examination a set of fifty slides bearing on the practical done under the above three sections, and a collection of herbarium materials.

The following books are suggested :—

1. The Lower Fungi—Fitzpatrick.
2. Fungi—Gwynne-Vaughan and Barnes.
3. Mycology and Plant Pathology—Harshberger.
4. Fungi and Disease in Plants—Butler.
5. Comparative Morphology of Fungi—Gaumann and Dodge.
6. Fundamental Principles of Bacteriology—Salle.
7. Manual of Plant Diseases—Heald.
8. Introduction to Plant Pathology—Heald.
9. Plant Viruses and Virus Diseases—Bawden.
10. Text-Book of Plant Viruses—K. M. Smith.
11. Root Disease Fungi—Garrett.
12. Insect Transmission of Plant Diseases—Leach.
13. Phytopathological Methods—Rawlins.
14. The Structure and Reproduction of Algae—Fritsch, Vols. I and II.
15. Fresh Water Biology—Ward and Whipple.
16. Marine Microbiology—ZoBell.
17. Life of Inland Waters—Needham and Lloyd.
18. British Fresh Water Algae—West and Fritsch.
19. Fresh Water Algae of the United States—G. M. Smith.
20. Marine Algae of the Northern Coast of North America—Taylor.
21. Pacific Marine Algae of the Allan Hancock Expeditions—Taylor.
22. Algae and their Life Relations—Tilden.
23. Limnology—Welch.
24. Introduction to Cytology—Sharp.
25. The Cell and its Development—Wilson.
26. Recent Advances in Cytology—Darlington.
27. Protoplasm—Seifriz.
28. Microtechnique—Johansen.
29. Cytology—Cowdry.
30. Recent Advances in Plant Genetics by Sansome and Phillips (Churchill).
31. Recent Advances in Agricultural Plant Breeding by Hunte and Leake.
32. Methods in Plant Breeding by Hayes and Imme.
33. Genetics in relation to Agriculture by Babcock and Claussen.

Journals:

1. Journal of the Indian Botanical Society.
2. Indian Journal of Agricultural Research.

3. Proceedings of the Indian Academy of Sciences. B.
4. Proceedings of the National Academy of Sciences (India). B.
5. Proceedings of the National Institute of Sciences (India). B.
6. Annals of Botany.
7. Annals of Applied Biology.
8. Review of Applied Mycology.
9. Biological Reviews.
10. Botanical Gazette.
11. Bulletin of the Torrey Botanical Club.
12. La Cellule.
13. Beihefte Zum Botaniches Centralblatt.
14. Cytologia.
15. Journal of Ecology.
16. Journal of Plant Physiology.
17. Phytopathology.
18. The New Phytologist.
19. Journal of the Linnean Society.
20. Proceedings of the Royal Society. B.
21. American Journal of Botany.
22. Journal of Genetics.
23. Journal of Heredity.

Zoology.

Candidates for the M. Sc. Degree (by Examination) shall choose a subject for study from the following list:—

1. Cytology and Genetics.
2. Protozoology.
3. Entomology.
4. Icthyology.
5. Histology.
6. Invertebrate Embryology.
7. Vertebrate Embryology.
8. Marine Zoology.
9. Parasitology.
10. Endocrinology.
11. Helminthology.

LIST OF TEXT-BOOKS.

1. (*a*) *Cytology*—
   1. The Cell—Wilson.
   2. General Cytology—Cowdry—relevant chapters.
   3. Experimental Cytology—Gray.
   4. Animal Cytology and Evolution—M. J. D. White.
   5. Cytology and Cell Physiology—G. Bourne.

(b) *Genetics :*

1. Mechanism and Determination of Sex—Goldschmidt.
2. Physical Basis of Heredity—Morgan.
3. The Theory of the Gene—Morgan.
4. The Principles of Heredity—L. H. Snyder (3rd Edn., 1946).
5. Animal Genetics—Crew.
6. Genetics—E. Altenberg, 1945.
7. Physiological Genetics—Goldschmidt.

2. *Protozoology :*

1. Protozoology—Wenyon, 2 Vols.
2. Problems and Methods of Research in Protozoology—Hegner and Andrews (relevant chapters).
3. Protozoology—Kudo.
4. Protozoology—Thomson and Robertson.
5. Biology of the Protozoa—Calkins.
6. Human Protozoology—Hegner and Taliaferro.

3. *Entomology :*

1. Principles of Insect Physiology—Wigglesworth.
2. Principles of Insect Morphology—Snodgrass.
3. General Text-Book of Entomology—Imms.
4. Problems of Applied Entomology—Wardle.

* *Reference books for Indian Fauna*:

(a) Manual of Entomology—Lefroy.
(b) Indian Insect Life—Lefroy.
(c) Hand-Book of Economic Entomology—T. V. Ramakrishna Ayyar.
(d) Forest Insects—Beeson.
(e) Medical Entomology—P. N. Roy.

4. *Ichthyology* :

1. History of Fishes—Norman.
2. Migration of Fish—Meek.
3. An Introduction to Study of Fishes—A. C. Gunther.
4. An Introduction to Study of Fishes—Tate Regan.
5. Biology of the Fishes—Kyle.
6. Fishes—Dean.
7. Palaeozoic Fishes—Thomas.
8. Cyclostomes and Fishes—Goodrich, E. S.

* The list of reference books is not to be regarded as exhaustive but as only to indicate roughly the scope of the work to be covered in the course.

5. *Histology :*
   1. Tissues of the Body—Le Gros Clark.
   2. Histology—Maximov and Bloom.
   3. Histology—Cajal.
   4. Histology—Romanow.
   5. Principles of Animal Histology—Dallgren and Kepler.
6. *Invertebrate Embryology :*
   1. Invertebrate Embryology—Mac Bride.
   2. Text-Book of Embryology—1st 3 Vols.—Korschelt and Heider.
   3. Experimental Embryology—Huxley and De Beer (Portions relating to Invertebrate).
7. *Vertebrate Embryology :*
   1. Vertebrate Embryology—Graham Kerr.
   2. Structure and Development of Vertebrates—Goodrich.
   3. Experimental Embryology—Huxley and De Beer (Portions relating to Vertebrate).
   4. Experimental Embryology—Morgan (Portions relating to Vertebrate).
   5. Embryonic Development—Speeman.
   6. Manual of Experimental Embryology—Hamburger (Portions relating to Vertebrate).
   7. Modern Theories of Development—Bertalanffy.
   8. Form and Causality—Dalcq.
   9. Experimental Analysis of Development—Durken.
8. *Marine Zoology :*
   1. Oceanography—Bigelow.
   2. Oceanography—Herdman.
   3. Depths of the Ocean—Murray and Hjort.
   4. Science of the Sea—Fowler and Allen.
   5. The Seas—Russell and Yonge.
9. *Parasitology :*
   1. A Guide to Human Parasitology—Blacklock and Southwell, 1944.
   2. Domestic Pests—L. Hunter.
   3. Human Parasitology—Chandler.
   4. Manual of External Parasites—Ewing.
   5. Parasitology—Stitt, 1938.
   6. Parasites of Man—Leuckart.
   7. Parasites of Man—Castellani.
   8. Animal Parasitology—Hegner, Root, Augustine, 1929.
   9. Animal Parasites of Man—Fantham, Stephens, Theobald.
   10. Nematode Parasites in Animals—Lapage.
   11. Nematode Parasites of Vetrebrates—Yorke and Maplestone.

10. *Helminthology :*

In addition to the books cited above for Parasitology—

1. Manual of Helminthology—Baylis, A.
2. Human Helminthology—Faust, E. C.

11. *Endocrinology :*

1. Essentials of Endocrinology—Grollman.
2. Endocrinology—Hoskins.
3. The Endocrine glands—Goldzeiher.
4. Hormones in Invertebrates—Hanstrom.
5. Recent Advances in Endocrinology—Cameron (Latest Edn.)

Geology.

(*i*) ADVANCED PETROLOGY.

Petrologic Mineralogy :

A study of the following groups :—Feldspar, pyroxene, olivine, amphibole, mica, nepheline, leucite, sodalite, scapolite, melilite, apatite, garnet, spinel, and ilmenite groups.

Petrology :

Igneous Rocks :—Principles of equilibria, solid solutions or isomorphism, polymorphism, order of crystallisation, hyper-fusible constituents, homogenous equilibria, crystallisation of magmas, diversification of igneous rocks, magmatic assimilation, petrographic provinces and comagmatic regions, origin of igneous rocks, classification of igneous rocks.

Metamorphic Rocks :—Factors of metamorphism, processes of metamorphism, kinds of metamorphism, degrees of metamorphism and zones, cycles of metamorphism.

Sedimentary Rocks :—Origin of organic and inorganic sediments, classification of sediments and sedimentary rocks and minerals, a detailed study of elastic sediments and sediments of chemical deposition.

Practical :

Microscopy.—Quantitative determination of double refraction by Berek compensator. Use of the Ocular screw micrometers and scale micrometers for measurements of lengths. Measurements of areas by integrating stage. Acquaintance with universal stage methods for determining 2V and twin laws of feldspars.

Chemical Microscopy.—Microchemical methods with reference to the following :—Calcite, dolomite, aragonite. Detection of ferruginous matter in rock sections. Discrimination of Fluor—apatite and chlorapatite. Use of the ore microscope for determining the more important minerals by reflected light like chalcopyrite, pyrite pyrrhotite, native copper, bornite, cinnabar, cuprite, etc.

Spot-tests.—With reference to elements, potassium, sodium, titanium, calcium, magnesium, zirconium, iron, aluminium, beryllium, tungsten.

Quantitative Analysis of the minerals.—Dolomite, feldspar, one ferromagnesian mineral.

Graphical representation of analysis in variation diagrams on linear and trilinear co-ordinates.

Books for Study:—

1. Interpretative Petrology—Alling, H. L. McGraw-Hill.
2. Evolution of Igneous Rocks—N. L. Bowen. Princeton University.
3. Descriptive Petrography of Igneous Rocks—Johansen, Vol. I. University of Chicago Press.
4. Eruptive Rocks—S. J. Shand. John Wiley.
5. Igneous Rocks and Depths of the Earth—R. A. Daly. McGraw-Hill.
6. Metamorphism—A. Harker. Methuen.
7. Petrology of the Sedimentary rocks—F. H. Hatch and R. H. Rastall, Allen and Unwin.
8. Principles of Sedimentation—W. H. Twenhofel. McGraw Hill.
9. Determination of Feldspars in thin Sections—Dr. Karl Chudoba. Thomas Murby & Co.

Books for Reference:—

1. Optical Mineralogy—A. N. Winchell, Vols. 1 to 3. John Wiley.
2. Structural Petrology of Igneous Rocks—R. Balk. Memoir 5. Geological Society of America.
3. Petrology and Petrography—Frank F. Grout. McGraw-Hill.

(ii) STRATIGRAPHY AND PALAEONTOLOGY.

Stratigraphy.—Fundamental principles of stratigraphy—Stratigraphical classification and correlation—review of the available criteria and their possible applications—merits and limitations of the different criteria—European Stratigraphical scale and its application to other parts of the World. Boundary problems—Fresh Water sediments and their importance in the study of earth history—Palaeogeography and preparation of palaeogeographical maps.

Palaeontology.—Value of fossils in the classification and correlation of strata—zonal classification—character of fossils useful in zonal classification, with reference to selected groups—life provinces in the past, their distribution and importance—palaeontological technique—Micro-palaeontology, its scope and methods—importance of micropalaeontological studies.

Review of the several theories of evolution—bearing of fossils on the study and discussion of problems in evolution, illustrated with reference to any selected group from each of the following (*a*) invertebrates, (*b*) vertebrates, (*c*) Plants.

NOTE—The above topics to be studied with special reference to recent stratigraphical and palaeontological studies in India.

Practical:

Study of the fossils belonging to the following groups with special reference to their (*a*) distribution in time and space, (*b*) stratigraphical value, (*c*) evolutionary history: foraminifers, corals brachiopods and ammonites. Study and identification of highly fossiliferous rocks both mega and microscopically.

Study of the fossils from the Trichinoploy Cretaceous rocks.

Description and identification of the leading plant fossils of the Gondwana and Tertiary.

Books for Study and Reference:

Principles of Historical Geology from the regional point of view—R. M. Field, Princeton University.

Stratigraphical Palaeontology—E. Neaverson, Macmillan.

Organic Evolution and adaptation to Environments—Nichols and others, Yale University Press.

Coal-measure Plants—Crookall, Edward Arnold.

Text-Book of Palaeontology—Zittel. Vols. 1, 2, 3—Macmillan.

Tertiary Fauna—A. M. Davis—Thomas Murby.

The Dinosaurs—W. E. Swinton—Thomas Murby.

Evolution—Julian Huxley—Allen and Unwin.

APPENDIX VIII.

EXAMINATIONS FOR TITLES IN ORIENTAL LEARNING.

COURSES OF STUDY.

1949.

ENTRANCE TEST FOR ORIENTAL TITLE EXAMINATIONS IN ARABIC AND PERSIAN.

Arabic—

1. Surat-i-Yusuf and Surati-Taha.
2. Mishkat, Kitab-ul-Iman, Kitab-ul-Mawaiz Wal Riqaq.
3. Alfakhri up to the end of Almuqtadir's reign.
4. Qasidat-al-Burda by al-Busiri.

Persian—

1. Sarmayah-i-Danish published by Jafari.
2. Rustum wa Suhrab, do.
3. Anwar-i-Suhayli—First and Second Chapters.
4. Miftahul Qawaid.

SANSKRIT.

Compulsory Division—S'irōmaṇi.

GENERAL PART.

Preliminary Examination.

a) Books prescribed—

PAPER I.

1. Vis'vanāthapañcānana—Muktāvali with S'abdakhaṇḍa-dinakari. (Nirnaya Sagara Press, Bombay).
2. Gautamadharmasūtras—the first pras'na—text only (Bibliotheca Sanskrita, Government Press, Mysore, or Anandasrama Press, Poona).
3. Manu-smṛti—Chapter 9—text only (Gopal Narayan & Co., Bombay).

PAPER II.

1. Jaiminiya nyāyamālāvistara—from the beginning of the work to the end of pāda I in Chap. III.
2. Mīmāṁsānyāyaprakās'a — Apōdeva, (Nirnaya Sagara Press, Bombay).

PAPER III.

1. Siddhāntakaumudī—Pūrvārdha only, omitting Taddhita (Nirnaya Sāgara Press, Bombay).
2. Rig Veda—Vedic Reader, I to X hymns (both inclusive), tex only by A.A. Macdonell (Oxford University Press).
3. Kaṭhōpaniṣad—text only (Anandasrama Series, Poona).

N.B.—In connection with the History of Sanskrit Language and Literature, for the Final Examination, under the General Part, the attention of teachers is invited to the list of books recommended for study and consultation under the corresponding subjects for Branch VIII—B.A. (Honours) Degree Examination.

SPECIAL PART.

BRANCH I—*Mimāṃsā Group.*

Preliminary Examination.

PAPER I.

1. Taittirīya Saṁhitā with Sāyaṇa's Bhāṣya (Kāṇḍa I, Prapāṭhaka I).
2. Āpastamba's S'rauta-sūtras with Rudradatta's Vṛtti—Pras'nās I to V both inclusive.

PAPER II.

1. Aitareya Brāhmaṇa with Sāyaṇā's Bhāṣya, the fourth Pañcikā.
2. Yājñavalkya-smṛti with Mitākṣarā, omitting Prāyas'cittādhyāya.

(Papers I and II: Anandasrama Series, Poona.)

PAPER III.

1. Bhaṭṭa-dīpikā from the beginning to the end of the third pāda of the third Adhyāya.
2. S'astra Dipikā of Pārthasārathi Mis'ra from the fourth Pāda of the third Adhyāya to the end of the sixth Adhyāya.

Final Examination.

PAPER I.

S'abara-bhāṣya, Chapter I—with Kumārila's Vārtika, Chapter I—omitting Slōka-Vārtika.

PAPER II.

Bhātta-dīpikā—Uttarasatka only.

(Papers I and II: Chowkhamba Book Depot, Benares.)

PAPER III.

1. Bṛhati of Prabhakara Mis'ra, first Adhyāyā, first Pāda (Madras University Sanskrit Series).
2. Bhāṭṭarahasya—whole (Sudars'ana Press, Conjeevaram).

BRANCH II—*Vedānta Group.*

Advaita—

Preliminary Examination.

PAPER I.

1. Brahmasūtras with S'aṅkara's Bhāṣya (Sri Vani Vilas Press, Srirangam).
2. Bhāmatī—Catussūtrī—(Nirṇaya Sāgara Press, Bombay).

PAPER II.

1. Pañcapādikā with Vivaraṇa—the first Varṇaka only (Vizianagaram Sanskrit Series, Benares).
2. Bhagavadgītā with S'ankarā's Bhāṣya. (Sri Vani Vilas Press, Srirangam.)

PAPER III.

1. Bṛhadāraṇyakopaniṣad with S'ankara's Bhāṣya—Chapter I only.
2. Isa, Kena and Pras'na—Upaniṣads with S'ri S'ankara's Bhāṣya.
3. Chāndōgyōpaniṣad with S'aṅkara's Bhāṣya—Adhyāya VI only.
4. Māṇḍūkyopāniṣad with Gaudapāda's Kārikās and S'ankara's Bhāṣya.

(Items 2 of Paper II and 1–4 of Paper III: Sri Vani Vilas Press, Srirangam.)

Advaita—

Final Examination.

PAPER I.

1. Siddhānta-Bindu (the whole)—text only.
2. Advaita-siddhi:
   - Pariccheda I:—
     - (i) From the beginning of the work up to the end of Āgamabādhōddhāra.
   - Pariccheda II:—Akhaṇḍārthavāda.

PAPER II.

1. Laghucandrikā from the beginning of the work up to the end of Upadhi and Akhaṇḍārtha-vāda section.
2. Tattvapradipikā of Citsukha—first pariccēda only.

(All the above: Advaitamanjari Series, Srividya Press, Kumbakōnam *or* Nirnaya Sagara Press, Bombay.)

PAPER III. (Common to all branches under Vēdānta).

1. Patanjali's Yōga sūtras with Bhoja vṛtti.
2. Is'varakṛṣṇa's Sānkhya kārikas with Gauḍapāda's Commentary.

(Nos. 1 and 2: Chowkhamba Book Depot, Benares.)

3. Advaita-Paribāṣa by Dharmarājādhvarin (Venkatesvar Press, Bombay).
4. Nārāyaṇārya's Nitimālā—Annamalai University Publication, Annamalainagar.
5. Das'aprakaraṇas by Madhvācārya—omitting Karmanirṇaya and Viṣṇutattvanirṇaya—(text only) (Madhava Vilas Book Depot, Kumbakonam).

Vis'iṣṭadvaita—

Preliminary Examination.

PAPER I.

Brahmasūtras with S'ri Bhāṣya (Ananda Press, Madras).

PAPER II.

Bhagavadgita with Rāmānuja's Bhāṣya (Ananda Press, Madras).

PAPER III.

1. S'rutaprakāsikā—Jijnāsādhikaraṇa (Nirnaya Sagara Press, Bombay).
2. Bṛhadāraṇyakōpaniṣad with Raṅgarāmānuja Bhāṣya (Chakravarti Ayyangar's Telugu Edition, Mysore).

Vis'iṣṭādvaita—

Final Examination.

PAPER I.

1. Vēdārthasamgraha (Pandit, Benares).
2. Siddhitraya by Yāmunācārya (Chowkhamba Sanskrit Series, Benares).

PAPER II.

1. Satadūṣaṇi with Caṇḍamāruta—the first fifteen Vādas only (according to the S'āstramuktāvali Edition—Conjeevaram).
2. Nyāyasiddhāñjana up to the end of Buddhipariccheda or the 5th Pariccheda (Pandit, Benares, or the S'ri Vaiṣṇavasiddhānta-pracara Sabha, Ltd., Madras).

PAPER III.

Same as under Advaita—Final Examination.

Dvaita—

Preliminary Examination.

PAPER I.

1. Brahmasūtras with Madhvācārya's Bhāṣya
2. Tattvaprakās'ika by Jayatīrtha.

PAPER II.

1. Gītātātparyanirṇaya with Jayatīrtha's Tīkā.
2. Madhvabhāṣya on the Bṛhadaraṇyakopaniṣad.

PAPER III.

Madhvācārya's Anuvyākhyāna with Jayatīrtha's Nyāyasudhā—*Jijñāsādhikarana only.*

} Madhava Vilas Book Depot, Kumbakonam.

Dvaita—

Final Examination.

PAPER I.

Nyāyāmṛta (the first Pariccheda only).

PAPER II.

1. Bhedojjivana, Vyāsarāyā.
2. Nyāyāmṛtataraṅgiṇī (the first Pariccheda only).

} Madhava Vilas Book Depot, Kumbakonam.

PAPER III.

Same as under Advaita—Final Examination with the change that the Prakaraṇas of Madhvācārya (eight of the Dasaprakaraṇas) be replaced by the Padārthasaṅgraha by Sri Padmanabhachar (Text only). To be had of Madhava Vilas Book Depot, Kumbakonam.

BRANCH III—*Nyāya Group.*

Preliminary Examination.

PAPER I.

1. Kaṇāda Vais'eṣika Sūtras—(Text only).
2. Gautama's Nyāya Sūtras with Vātsyāyana's Bhāṣya—Chapters I and II—(Vizianagram Sanskrit Series—F. J. Lazarus & Co., Benares, or Chowkhamba Book Depot, Benares).

PAPER II.

1. Jagadis'a's Pañcalaksaṇī and Siṁhavyāghrī (Chowkhamba Book Depot, Benares).

2. Gadādharā's Caturdas'alaks'aṇi :—

(i) From the beginning of the work up to the end of Dvitīyasvalakṣaṇa.

(ii) Kūṭaghaṭitalakṣaṇa.

(iii) Kūṭaghaṭitalakṣaṇa.

(iv) Vyadhikaraṇa—dharmāvacchinnābhāva—khaṇḍanagrantha (Chowkhamba Book Depot, Benares).

PAPER III.

1. Gadādhara's Pakṣatā—Sārvabhaumāntam (Chowkamba Book Depot, Benares).

2. Gadādhara's Siddhāntalakṣaṇa—the whole (Chowkhamba Book Depot, Benares).

Final Examination.

PAPER I.

Udayanācārya's Nyāyakusumāñjali (Chowkamba Book Depot, Benares, or Bibliotheca Indica, Calcutta).

PAPER II.

1. Khaṇḍadeva's Bhāṭṭarahasya—to the end of prathamā. (Sudarsana Press, Conjeevaram).

2. Gadādhara's Vyutpattivāda—whole (Nirnaya Sagara Press, Bombay).

PAPER III.

1. Gadādhara's Avayaya—from the beginning of the work to the end of Pratijñā. } Chakravarti Ayyangar's Telugu Edition, Mysore.

2. Gadādhara's Sāmāyanirukti. } Chakravarti Ayyangar's Telugu Edition, Mysore.

3. Gadādhara's Savyabhicārasāmānyalakṣaṇa. } Sudarsana Press, Conjeevaram.

4. Gadādhara's Satpratipakṣa-vibhājaka. } Sudarsana Press, Conjeevaram.

5. Gadādhara's Avacchedakata nirukti, (Chowkhamba Book Depot, Benares).

BRANCH IV—*Vyākaraṇa Group.*

Preliminary Examination.

PAPER I.

Paribhāṣēndus'ekhara, (Whole). } Chowkhamba Book Depot, Benares.

PAPER II.

1. Prauḍhamanoramā—text from the beginning to the end of Avyayibhāva. } Chowkhamba Book Depot, Benares.

2. Siddhānta Kaumudi, Kṛt and Taddhita Sections (Text only).

PAPER III.

S'abdaratna from the beginning to the end of Strīpratyaya.

Note:—The two sections of the Siddhānta Kaumudi will be dealt with in the paper on prescribed books—Special I—and 25 marks will be allotted to questions on these two sections.

Final Examination.

PAPER I.

Mahabhāṣya—Navāhnika (Nirnaya Sagara Press, Bombay).

PAPER II.

1. Laghus'abdendus'ekhara—up to and excluding Kārakaprakaraṇa (Chowkhamba Book Depot, Benares).
2. Laghumañjūṣa, by Nages'a—only the sections containing the Subartha-vicāra and the Nāmārtha-vicāra.

PAPER III.

1. Gadādhara's Vyutpattivāda—from the beginning to the end of prathamā.
2. Vaiyākaraṇa-bhūṣaṇa-sāra—All the sections except the Subartha vicāra and the Nāmārtha-vicāra.

BRANCH V—*Sāhitya Group*.

For Sāhitya S'irōmaṇi and Vidvān—Sanskrit, when offered as one of the two languages for the Vidvān (a) Title.

Preliminary Examination.

PAPER I.

1. Bāṇa's Kādambari—the portion from the Mahās'vetāvṛttānta to the end of Pūrvabhāga only (Bombay Sanskrit Series).
2. Sriharṣa's Naiṣadha, Cantos 10 and 11.
3. Kumārasambhava, Cantos 1 to 5 both inclusive. } Nirnaya Sagara Press, Bombay.
4. Nilakaṇṭhavijaya by Nilakaṇṭha Dikṣita, Ucchvāsa III only. (Balamanorama Press, Mylapore).

PAPER II.

1. Sākuntala.
2. Mālatimādhava.
3. Mṛcchakaṭika.
4. Mudrārākṣasa.

} Gopal Narayan & Co., Bombay.

PAPER III.

1. Daṇḍin's Kāvyādars'a.
2. Siddhānta-Kaumudi—Pūrvārdha to the end of Apatyādhikāra.

Final Examination.

PAPER I.

For Sāhitya-S'irōmaṇi Paper I and Vidvān—Sanskrit, when offered as one of the languages for the Vidvān (a) Title.

1. Siddhānta Kaumudi—Uttarārdha omitting Uṇādi, Vaidika and Svara Prakaraṇas.
2. Vararuci's Prākṛta-Prakās'a (Chowkamba Book Depot, Benares).
3. Vṛttaratnākara, Chapters 1 to 4.
4. Vāmana's Kāvyālaṅkāra Sūtravṛtti.

For Sāhitya-Sirōmaṇi only, Branch V.

PAPER II.

1. Dhvanyāloka (Kāvyamālā Series, Bombay).
2. Udbhaṭa's Kāvyālāṅkārasāra with Pratihārendurāja's vṛtti. (Nirnaya Sagara Press, Bombay).

PAPER III.

1. Citramimāmsā (Kāvyamālā Series, Bombay).
2. Rasagaṅgādhara by Jagannātha from the beginning to the end of Rūpaka.

Mammaṭa's Kāvyaprakās'a (Bombay Sanskrit Series).

VIDVAN TITLE EXAMINATION.

For Sanskrit when offered as the subsidiary language for the Vidvan (b) Title.

Preliminary Examination.

Kālidāsa's Kumārasambhava—Cantos I to V.

Kādambari Samgraha, Pūrvabhāga (whole), R. V. Krishnamachariyar, Munitrayamandiram, Kumbakonam.

Final Examination.

Sākuntala by Kālidāsa (whole).

BRANCH VI—*Jyotiṣa Group.*

Preliminary Examination.

PAPER I.

1. Bhāskarācārya's Bijagaṇita—complete.
2. *Bhāskarācārya's Lilāvati—whole omitting Parikarmaṣṭaka, Kuṭṭaka and Pas'a.

PAPER II.

1. Kṣetra-miti by Durgāprasāda, Books III and IV only.

(Above items: To be had of Nirnaya Sagara Press, Bombay, or Punjab Sanskrit Book Depot, Lahore.)

2. Trikoṇamiti—To be had of Lazarus & Co., Benares.

*With reference to "*Lilāvati*", attention is invited to the Edition of this work brought out by Pandit V. Venkatarama Sastri, Vedanta Patasala, Nallur, *via* Sundaraperumal Koil, Tanjore District, (to be had of the Editor).

PAPER III.

Cāpiyatrikoṇamiti and Golarekhāgaṇita only in the Golaprakās'a. The portions prescribed in the Golaprākās'a are available at the Chowkhamba Book Depot, Benares, and the Venkatesvar Press, Bombay.

Final Examination.

PAPER I.

Sidhānta S'irōmani (whole).

PAPER II.

1. Brhat-Saṁhitā (whole).
2. Brhajjātaka (whole).
3. Muhūrtacintāmaṇi (whole).

(Paper I and Paper II Nos. 1–3:) To be had of Lazarus & Co. Benares, or Chowkhamba Book Depot, Benares or Punjab Sanskrit Book Depot, Lahore, or Anandasrama Press Poona, or Oriental Books Supplying Agency, 15 Sukrawarpet, Poona.

4. Pras'namārga—Pūrvārdha only

PAPER III.

1. Sūryasiddhānta (whole).
2. Āryabhaṭiya (whole).

(Nos. 1–2:) To be had of Lazarus & Co., Benares, or Chowkamba Book Depot, Benares or Punjab Sanskrit Book Depot Lahore, or Anandasrama Press Poona, or Oriental Books Supplying Agency, 15, Sukrawarpet Poona.

3. Grahalāghava—from the beginning of the work to the end o Candragrahaṇādhikāra—Venkatesvar Press, Bombay.

BRANCH VII—*Ayurveda Group.*

Preliminary Examination.

PAPER I.

Astāṅgahṛdya S'ārira-Nidāna-cikitsā-sthānāni. (To be had o Anandasrama Press, Poona, or of Nirnaya Sagara Press Bombay).

PAPER II.

1. Carakasaṁhitā—Sūtrasthāna only—Nirnaya Sagara Press Bombay.
2. Sus'ruta-Saṁhita—Sūtra and S'ārira only—Nirnaya Sagara Press, Bombay.
3. Pratyakṣa-S'ārira—by Mah-mahopādhyāya Gananath Sen M.A., L.M. & S., Calcutta.

PAPER III.

Rasaratnasamuccaya—The first eleven Chapters—To be had of the Proprietor, Venkatesvar Press, Bombay.

Final Examination.

PAPER I.

Carakasaṃhitā (whole)—omitting Sūtrasthāna.

PAPER II.

Sus'rutasaṃhitā (whole) omitting Sūtra and S'ārira.

PAPER III.

1. Mādhavanidāna (whole)—To be had of Anandasrama Press, Poona, or the Nirnaya Sagara Press, Bombay.
2. Aṣṭāṅgahṛdaya (Kalpa and Uttara).
3. Rasaratnasamuccaya—Chap. 12 to the end.
4. Rasahṛdaya of Govindapāda—To be had of Nirnaya Sagara Press, Bombay.
5. Siddhānta Nidāna by Mahāmahopādhyāya Gananath Sen, M.A., L.M. & S., Calcutta.

(N.B.—*Students are advised to consult the Commentary "Kalyāṇāvārtikam" on No. 5 by K.G. Natesa Sastriyar.*)

MARATHI.

VIDVAN *(a)*.

Preliminary.

V. *Prose.*—

1. Pratibha Sadhan by Prof. N. S. Phadke, M.A., Purvardha.
2. Ulka by V. S. Khandekar.
3. Punya Prabhava by R. G. Gadkari.

V. *Poetry.*—

1. Ambarai by Girish.
2. Following Extracts from Navaneet :—
   Moropant—Karnarjuna Yuddha.
   Vaman Pandit—Narasimhavatar.
   Mukteswar—Narad Neeti.
3. Susheela by Rev. Tilak.

VI. Composition :—Nibandha Lekhan Ani Anuvad by V. V. Bhide (for reference).

Final.

V. *Prose.*—

1. Bhanglelan Deool by G. T. Madkholkar.
2. Pratibha Sadhan by Prof. N. S. Phadke, Uttarardha.

3. Bhava Bandhan by R. G. Gadkari.
4. Vichar Vilas by Prof. V. M. Joshi, M.A.

V. *Poetry.*—

1. Nala Damayanti Swayamvarakhyan by Raghunath Pandit, edited by Priyolkar.
2. Padyaratnavali by Krishnashastri Chiplunkar.
3. Yashodhan by Yeshwant—Pages 1 to 51.

VI. *Grammar, Prosody and Poetics*,—

1. Vritta Darpana by P. T. Godbole.
2. Abhinava Sahitya Sopan by Mone, Vol. VI.
3. Abhinava Kavya Prakash by Prof. Jog.

VIDVAN (*b*).

Preliminary.

I. *Prose.*—

1. Sushilecha Deva V. M. Joshi.
2. Kalidasachi Srishti by Prof. M. D. Altekar.
3. Krishnarjuna Yuddha by N. C. Kelkar.

II. *Prose.*—

1. Vanavasi Phool by Rev. Tilak.
2. Yeshodhan by Yeshwant—Pages 52 to 105.
3. Following Extracts from Navaneet :—
   Moropant—Ambareeshakhyan.
   Vaman Pandit—Bharat Bhava.
   Raghunath Pandit—Nala Damayanti Swayamvar.

III. *Composition.*—

1. Nibandhamala by V. K. Chiplunkar—Pages 1 to 151.
2. Nibandha Lekhan Ani Anuvad by V. V. Bhide (for reference).

IV. *Grammar.*—

1. Marathi Sahitya va Vyakarana by Mone.
2. Shastriya Marathi Vyakarana by Damale—Chapters on Nama, Sarvanama, Vishesanen and Kriyapaden.
3. Proudh Bodh Vyakarana by R .B. Joshi.

V. *Prosody and Poetics.*—

1. Abhinava Kavya Prakash by Prof. Jog.
2. Kavyalochan by D. K. Kelkar.
3. Vritta Darpana by P. T. Godbole.

Final.

I. *Prose.*—

1. Dona Dhruva by V. S. Khandekar.
2. Balidan by N. C. Kelkar.
3. Vidyaharan by K. P. Khadilkar.
4. Sahitya Ani Sansar by Prof. Phadke.

II. *Poetry.*—

1. Jnaneshwari—Chapter III.
2. Tambe Yanchi Kavita—Part I.
3. Maharashtra Meghdut by S. A. Sabnis.

III. *History of Literature.*—

1. Maharashtra Saraswata—Part I.
2. Chapters X, XI and XII from Bhasha Shastra va Marathi Bhasha by K. P. Kulkarni.
3. Marathi Kadambari by Bapal and Godbole—Chapters I to IV.

IV. *Grammar.*—

1. Shastriya Marathi Vyakarana by Damale, Chapters on Samasa, Vibhakthi and Prayoga.
2. Sri Jnaneshwareetil Marathi Bhashechan Vyakarana by V. K. Rajwade.

V. *Prosody and Poetics.*—

1. Padya Prakash by Dr. Patwardhan.
2. Kavyalochan by D. K. Kelkar.
3. Sulabha Alankar by R. B. Joshi.

HINDI.

VIDVAN (*a*).

Preliminary.

IV. *Prescribed text-books—Poetry.*—

1. Kavya Kunj (Hindi Bhavan, Lahore).
2. Sudama Charit by Narothamdas (Hindi Sahitya Sammelan).
3. Saras Suman by Gurubhakt Singh (Indian Press, Ltd., Allahabad).
4. Chayanika (D. B. Hindi Prachar Sabha, Madras).
5. Ramacharitmanas—Ayodhya Kand.
6. Jayadrath Vadh by Maithilisaran Gupt.

V. *Prescribed text-books—Prose.—*

1. Hindi Gadya Nirman (Hindi Sahitya Sammelan).
2. Hindi Madhuri, Part III (D.B. Hindi Prachar Sabha).
3. Rang Bhumi by Premchand.
4. Kalyani by Jainendra Kumar (Hindi Grandh Ratnakar Karyalaya, Bombay).
5. Bis Kahaniyan by Ramachandra Tandon (Hindi Mandir, Prayag).
6. Hindi Ki Pratinidhi Kahaniyan by B. Vajapai (Hindi Sahitya Sammelan).

VI. *Composition.—*

Books for reference.

1. Prabhandha Prabhakar by Gulab Rai (Hindi Bhavan, Lahore).
2. Sahitya Siksha (Hindi Grandh Ratnakar Karyalaya, Bombay).
3. Nibandha Kusumavali (Vrati Bhrata, Lahore).

Final.

IV. *Poetry.—*

1. Surdas—Surpanch Ratna (Ramnarayan Lal, Allahabad).
2. Gurubhakt Singh—Nurjahan.
3. Tulasidas—Kavitavali Ramayan.
4. Maithili Saran Gupt—Saket.
5. Jaisanker Prasad—Lahar.
6. Mira—Padavali.

V. *Drama.—*

1. Jaisankar Prasad—Skanda Gupt.
2. Udai Sankar Bhatt—Kamala.
3. Harischandra—Mudra Rakshas.
4. Raja Lakshman Singh—Sakuntala Natak.
5. Seth Govind Das—Vikas.
6. Lakshminarayan Misra—Sindur Ki Loli.

VI. *Grammar, Prosody and Poetics.—*

1. Vyakaran Pradip (Hindi Bhavan, Lahore).
2. Sankshipt Hindi Vyakaran—Kamptaprasad Guru.

3. Kavya Pradip (Hindi Bhavan).
4. Alankar Pravesika (Motilal Banarasidas, Lahore).

VIDVAN (*b*).

Preliminary.

I. *Poetry.*—

1. Prachin Padya Sangrah (D. B. Hindi Prachar Sabha, Madras).
2. Chayanika (D. B. Hindi Prachar Sabha, Madras).
3. Manas Manjari (Ram Narayan Lal).
4. Sumana by Gopalsaran Singh.
5. Jayadrath Vadh—Maithili Saran Gupt.
6. Manasi by Uday Sankar Bhatt.

II. *Prose.*—

1. Triveni—Ramachandra Sukl (Indian Press, Ltd., Allahabad).
2. Bharatendu Harischandra—Syamasunderdas (Indian Press, Ltd., Allahabad).
3. Hindi Gadya Nirman—Hindi Sahitya Sammelan.
4. Madhu Manjari (D. B. Hindi Prachar Sabha).
5. Char Kahaniyan—Sudarsan (Hindi Grandh Ratnakar Karyalaya, Bombay).
6. Kaya Kalp—Premchand.
7. Sahitya Ki—Santi Priya Dwivedi.

III. *Composition.*—

Books for reference only.

1. Prabandh Prabhakar—Gulab Rai (Hindi Bhavan, Lahore).
2. Sahitya Siksha (Hindi Grandh Ratnakar Karyalaya, Bombay).
3. Nibandha Kusumavali (Vrati Bhrata, Lahore).

IV. *Grammar.*—

1. Vyakaran Pradip (Hindi Bhavan, Lahore).
2. Vyakaran Chandroday by Ramlochan Saran.
3. Sankshipt Hindi Vyakaran by Kamptaprasad Guru.

V. *Prosody and Poetics.*—

1. Hindi Padya Rachana—Ram Nares Tripathi (Hindi Mandir, Prayag).
2. Saral Pingal (Hindi Sahitya Sammelan).

3. Alankara Pravesika (Motilal Banarasidas).
4. Alamkar Prakash (Hindi Sahitya Sammelan).

Final.

I. *Poetry.—*

1. Sur Panch Ratn—Edited by Lala Bhagavan Din.
2. Sankshipt Padmavat (Indian Press, Ltd.)
3. Kabir Vachanavali (N.P. Sabha).
4. Saket by Maithili Saran Gupt.
5. Ansu by Jai Sankar Prasad.
6. Priyapravas by Ayodhya Singh Upadhyay.

II. *Drama.—*

1. Chandra Gupta by Jaisankar Prasad.
2. Vikas by Sait Govind Das.
3. Raksha Bandhan by Hari Krishna Premi.
4. Mudra Rakshas by Harischandra.
5. Resami Tai by Ram Kumar Varma.

III. *History of Language and Literature.—*

1. Hindi Bhasa Ka Itihas by Dr. Dhirendra Varma.
2. Hindi Sahitya Ka Itihas by Ramachandra Sukl.
3. Hindi Gadya Saili Ka Vikas by Pt. Jagannath Sarma.

IV. *Grammar.—*

1. Hindi Vyakaran—Kamta Prasad Guru (N. P. Sabha Kashi).
2. Vraj Bhasa Vyakaran—Dhirendra Varma (Ramnarayan Lal, Allahabad).

V. *Prosody and Poetics.—*

1. Kavya Pradip (Hindi Bhavan, Lahore).
2. Chand Prabhakar—Bhanu.
3. Navras by Gulab Rai.
4. Alankara Manjusha by Lala Bhagwan Din.
5. Alochanadars }
6. Kavyamimamsa } Ramasankar Sukl.

TAMIL.

VIDVAN (*a*)

Preliminary.

Poetry.—

Cilappadikaram—Vancikkantam.

Tirukkural—Chapters 64 to the end of 88th Chapter.

Appar Tevaram— 4th Tirumurai (1st 10 padigams).

Perumal Tirumoli.

Paranjoti Tiruvilayadal (from the 58th to the end of 61st Patalāms.

Maduraikkalambagam.

Alagar Killai Vidu Toodu.

Prose.—

1. Udayanan Carittiram by Dr. V. Swaminatha Aiyar.
2. Sakuntalam by Maraimalai Adigal with Introduction.

Grammar.—

1. Nannul Virutti. (Navalar Edition).
2. Agattinai Iyal—Ilakkana Vilakkam.
3. Yapparungalakkarikai and Dandi Alankaram—Text only.

Final.

Poetry.—

Mullaippattu.

Purananuru—201-250 stanzas.

Kuruntogai—101-200 stanzas.

Manimekalai—11-20 kadai.

Chintamani—Padumaiyar Ilambagam.

Palamoli—51-100 stanzas. (Edited by T. Chelvakesavaraya Mudaliar).

Grammar.—

1. Tolkappiyam—Colladikaram— Cenavaraiyam.
2. Purapporulvenba-malai—1 to 10 padalams.
3. Yapparungalakkarikai. (S. S. W. P. Edition).
4. Dandiyalankaram—Palaiya-v-urai.

VIDVAN *(b)*

Preliminary.

Poetry.—

Kaccikkalambakam by Poondi Aranganatha Mudaliyar (ed. by M. Kandaswami Mudaliyar, No. 44, Mulla Sahib Street, G. T., Madras).

Minakshiammaippillaittamil.

Chitambaracceyutkovai.

Tancaivanankovai.

Moovar Ula.

Kacci Ananda Rutresvarar Vantu Vitu Tutu.

Parancoti Tiruvilayadal—Maduraikkantam—from the beginning to the end of Tirumanappatalam.

Yasotara Kavyam (Saiva Siddhanta Works, Limited, 6, Coral Merchant Street, G. T., Madras).

Kalingattupparani.

Tirukkural—Arattuppal.

Culamani, 1st 4 carukkams (Chennai Tamil Sangam, Mount Road, Madras).

Grammar.—

Nannul—Viruttiyurai (Navalar's edition).

Ilakkana Vilakkam Agattinai Iyal and Pattiyal.

Purapporul Venba Malai—Dr. V. Swaminatha Ayyar's Edition.

Yapparungalakkarikai (S.S.W.P. Edition).

Dandiyalankaram with the old commentary.

Prose.—

Nedunalvadai—Tiran Ayndu Telital by P. Kothandapani Pillai, Madras Civil Service (Chennai Tamil Sangam, Mount Road, Madras).

Alutaiya Nambikal or Sundarar (Ottrumai Office, 8, Vyasa Rao Street, Tyagarayanagar, Madras).

Murugan Allatu Alaku (By T. V. Kalyanasundara Mudaliyar Sadhu Press, Royapettah, Madras).

Final.

Poetry.—

1. Purananuru—1 to 100 stanzas.
2. Agananuru—Manimitaipavalam—First 92 Verses only.
3. Kalittogai—Neytarkali.

4. Kuruntogai—201 to 300 stanzas.
5. Pattuppattu—Tirumurugarruppadai.
6. Patirrupattu—2nd and 3rd.
7. Tirukkural—Porutpal.
8. Cilappadigaram—Pukarkandam.
9. Tiruvacakam—Tiruccadakam only.
10. Kambaramayanam—Yuttakandam from the beginning to the end of Kumbakarnan Vadaippadalam.
11. Tiruvaymoli—3rd Pathu with Idu.
12. Periyapuranam—Ilaimalinda carukkam.
13. Manniyal Ciru Ter.

Grammar.—

1. Tolkappiam—Eluttadigaram—Naccinarkkiniyam.
2. Tolkappiam—Colladigaram — Naccinarkkiniyar's Commentary on Kilaviyakkam, published by Bavanandam Academy.
3. Sivagnana Yogi's Payira Virutti and Mudarcuttira Virutti.
4. Tolkappiam—Poruladigaram—Agattinai Iyal and Purattinai Iyal and Porul Iyal with Naccinarkkiniyar's commentary.
5. Tolkappiam—Poruladigaram—Meyppattiyal, Uvamai Iyal and Marapiyal with the commentary of Perasiriyar.
6. Iraiyanar—Kalaviyal Urai (Bavanandam Academy edition).
7. Vira Soliyam—Alangarappadalam.
8. Panniru Pattiyal (S. I. S. S. P. W., Ltd., 6, Coral Merchant St., G. T. Madras).

History of Language and Literature.—

Caldwell's Comparative Grammar of Dravidian Languages—Introduction.

Tamil Moli Varalaru by V. G. Suryanarayana Sastriar.

XVII Century Tamil Poets by Somasundara Desigar.

Dravidic Pronouns by Venkatarajalu Reddiar.

For Consultation.—

Tamil Ilakkiya Varalaru by K. Subrahmania Pillai, M.A., M.L.

Tamil Varalaru by K. Srinivasa Pillai (All the volumes).

Tamil Navalar Caritai.

VIDVAN (*d*)

Same as for Vidvan (*b*) with the following additions :—

Preliminary.

History of the Tamil Country.—

Tamilar Charithiram by N. S. Kandiah Pillai (Ottrumai Office, Tyagarayanagar, Madras).

Ceran Senguttuvan by M. Raghava Ayyangar.

Pandiyar Varalaru by Sadasiva Pandarattar.

Pallava History by M. Rajamanikkam Pillai (*For reference*).

Periplus, Translated by Somasundara Desikar.

Munram Kulothunga by V. R. Ramachandra Dikshitar.

Final.

University B.A. Selections, Volume II—Tamil Inscriptions.

(*Note*:—In Poetry, Paper I will comprise questions on text-books 1 to 6, and Paper II on the rest.

In Grammar, Paper I will comprise questions on text-books 1 to 3 and Paper II on the rest.

TELUGU.

VIDVAN (*a*)

Preliminary.

Poetry.—

1. Bharatam, Virataparvam, Canto 2.
2. Harischandranalopakhyanam, Canto 1.
3. Jatakakathagucchamu by Sannidhanam Suryanarayana Sastri, 44, Jeera, Secunderabad.

Prose.—

History of Vizianagra Andhra Literature, Part I by Tekumalla Atchyuta Rao, New Street, Mylapore, Madras.

Drama:—

1. Malati Madhavam by Janamanchi Venkataramiah, No. 1, Lalithapuram Street, Royapettah, Madras.
2. Purnima by Panuganti Lakshminarasimham.

N.B.—The first paper on Texts will be on Poetry; the second paper on Prose and Drama.

Grammar.—

1. Balavyakaranam.
2. Praudavyakaranam.

N.B.—Questions on Grammar will appear in both the text papers but will only be in relation to the texts studied.

Final.

Poetry.—

1. Bhimeswarapuranam by Srinadha, Cantos 1 and 2.
2. Amuktamalyada by Krishnadevaraya, Cantos 1 and 2.
3. Brindavanam by Venkataparvateeswara Kavulu, Cocanada.

Drama.—

Parvatiparinayamu by A. V. Kodandapani Sastri, Telugu Pandit, Repalle.

Prose.—

Vyasamanjari by Dr. C. R. Reddy.

Grammar, Prosody and Poetics:—

1. Chintamanivishayaparisodhanam by V. Ch. Sitarama Sastrulu.
2. Appakaviyamu, Canto 3.
3. Sahityadarpanamu, Chapters 1 to 4, Tr. by Vedam Venkataraya Sastry.

N.B.—The first paper on Texts will be on Poetry; the second on Drama and Prose. No direct questions on Grammar, Prosody and Poetics will be asked in the Text papers.

VIDVAN (*b*).

Preliminary.

Poetry.—

1. Bharatam, Virataparvam, Canto 2.
2. Kumarasambhavam by Nannechoda, Cantos 1 and 2.
3. Uttaraharivamsam by Nachana Somana, Canto 2.
4. Navanatha Charitra, Cantos 2 and 3 (Madras University Publication).
5. Sugriva Vijayam—Yakshaganam by Rudrakavi.
6. Dhruvacharitra by G. Veeraraghava Sastry, Asthana Vidvan, Gadwal.

Prose:—

1. Karmayogamu by Chirantanananda Swami, Ramakrishna Mutt, Mylapore, Madras.
2. Vyasamala Ed. P. V. Somayaji, Hindu College, Masulipatam. The following Essays only:—(a) Andhranatakarambhadasa; (b) Vishadanta Natakamulu; (c) Nigama Sarma Akka; (d) Vijayanagarasamrajyamu, dani Udaya prasastulu; (e) Kuchipudi Bhagavathulu (f) Vangmayamananemi; (g) Kavitwamu; (h) Bhavakavitwamu.
3. History of Vizianagara Andhra Literature, Part II, by Tekumalla Atchyuta Rao, New Street, Mylapore, Madras.

Drama.—

1. Venisamharamu by Vaddadi Subbarayudu.
2. Brinda by S. Sachidananda Sastry.

Grammar.—

1. Balavyakaranam.
2. Praudavyakaranam.

Prosody and Poetics—

1. Kavyalankarachudamani by Vinnakota Peddana.
2. Sahitya Darpanam, Cantos 6—10. Tr. by Vedam Venkataraya Sastry.
3. Andhra Chandralokam by Aditam Sura Kavi.

N.B.—The first paper on texts will be on Poetry; the second on Prose and Drama.

Final.

Poetry.—

1. Bharatam, Anusasanikaparvam, Canto 2.
2. Raghava Pandaviyamu by Surana, Cantos 1 and 2.
3. Kasikhandamu by Sreenadha, Cantos 1 and 2, with "avatarika".
4. Vijaya Vilasamu by Chemakura Venkata Kavi. Ed. by Vedam Venkataraya Sastry.
5. Sivabharatam, Canto 2, Pages 57—122 by Gadiyaram Venkata Sesha Sastry, High School, Proddatur.
6. Tripurantakodaharnam Ed. by Nidadavolu Venkata Rao, Lecturer, Madras University.

Prose.—

1. Vyasamanjari by Dr. C. R. Reddy (Andhra University Publication).
2. Desayatrala Kathalu by P. Jagannadhaswami, Parlakimedi.
3. A Critique on Nannechoda's Kumara Sambhava (Madras University Publication).

Drama.—

1. Mudrarakshasam by P. V. Gopalam Garu, Retd. Pleader, Amalapuram.
2. Subhadra Kalyanam by Mudigonda Nagaveereswara Sastry, Secunderabad.

Grammar.—

1. Narayaniyandhra Vyakaranamu by Charla Narayana Sastry.
2. Andhra Bhashanusasanam by Malladi Suryanarayana Sastry.

Prosody and Poetics.—

1. Appakaviyam, omitting Cantos 2 and 5.
2. Dasarupakam, Cantos 3 and 4. Tr. by Malladi Suryanarayana Sastry.
3. Kuvalayanandasaram. Tr. by Bulusu Venkataramana Sastry.

History of Language and Literature.—

1. Dravidian Languages by G. J. Somayaji.
2. Bhashotpatti Kramamu by K. Ramakrishniah.
3. Andhra Vangmaya Charitra Sangrahamu Published by Vavilla Ramaswami Sastrulu & Sons.
4. Sandhi by K. Ramakrishniah.

N.B.—The first paper on texts will be on Poetry; the second on Prose and Drama.

VIDVAN (*d*).

Preliminary.

Prose, Poetry and Drama.—

The same as for Vidvan (b).

Grammar I.—

1. Balavyakaranam.
2. Praudavyakaranam.

Grammar II.—

1. Andhrabhashanusasanam by Malladi Suryanarayana Sastry.
2. Narayaniyandhravyakaranam by Charla Narayana Sastry.

History of South India:—

The portion prescribed is Andhra History and the book recommended for study is "Andhrula Charitra" by Chilukuri Veerabhadra Rao.

N.B.—The two Text papers, the paper on Composition, and the first paper on Grammar to be common with Vidvan (b) Preliminary.

Final.

Poetry, Prose and Drama.—

The same as for Vidvan (b).

Advanced Grammar, Prosody and Poetics I.—

1. Appakaviyam, omitting Cantos 2 and 5.
2. Dasarupakam, Cantos 3 and 4. Tr. by Malladi Suryanarayana Sastry.
3. Kuvalayananda Saram. Tr. by Bulusu Venkataramana Sastry.

Advanced Grammar, Prosody and Poetics II.—

1. Tatsama Chandrika by Sannidhanam Suryanarayana Sastry (Chapters on Sandhi and Samasa only).
2. Chintamanivishayaparisodhanam by V. Ch. Seetaramaswami Sastry.
3. Sahitya Darpanam. Tr. by Vedam Venkataraya Sastry, Cantos 6-10.
4. Tripurantakodaharanam Ed. by Nidadavolu Venkata Rao Research Department, University of Madras.

History of Language and Literature.—

The same as for Vidvan (b).

Inscriptions.—

Sasanapadyamanjari Ed. by Jayanti Ramayya Pantulu.

N.B.—The two papers on Texts, the first paper on Advanced Grammar, Prosody and Poetics, and the paper on History of Language and Literature can be common with Vidvan (b) Final.

KANNADA.

VIDVAN (*a*).

Preliminary.

(i) *Prescribed Text-Books I.*—

1. Gadayuddha by Ranna (whole).
2. Kadambari Sangraha (whole)—Mysore University Publication.
3. Pancha Tantra (Durga Simha)—3rd Tantra.

(ii) *Prescribed Text-Books II.*—

1. Mitravinda Govinda (Singararya).
2. Mudra Manjusha (Kempu Narayana).
3. Chikka-Devaraya Vamsavali (Tirumalarya).
4. Vimarse (Part I)—(Masti).
5. Sahitya Mattu Vimarse (Bendre).

(iii) *Composition.*—

Final.

(i) *Prescribed Text-Books I.*—

1. Pampa Bharata: Aswasas 2 to 4 (both inclusive).
2. Dharmamrita by Nayasena: Aswasas 1 to 5 (both inclusive).

(ii) *Prescribed Text-Books II.*—

1. Harischandra Kavya Sangrah (Mysore University Publication) (whole).
2. Udyoga Parva (Kumara Vyasa): Sandhis 1 to 4 (both inclusive).

(iii) *Grammar, Prosody and Poetics.*—

1. Sabdamanidarpana (Basel Mission Press).
2. Chandombudhi—Nagavarma (Sree Vatsa Press). Kavyavalokana omitting Sabdasmriti.
3. Kannada Kaipidi (Mysore University).
4. Karnataka Kavi Charite (3 Vols.), by R. Narasimhachariyar

VIDVAN (*b*).

Preliminary.

(i) *Prescribed Text-Books I.*—

1. Gadayudha by Ranna (whole).
2. Kabbigara Kavva by Andayya (whole).
3. Adbhuta Ramayana.

(ii) *Prescribed Text-Books II.*—

1. Jagannatha Vijaya by Rudrabhatta—Aswasas 4 and 5.
2. Vacana Sastra Rahasya Part I—(Pages 1-221 only).
3. Sakuntala Nataka (Basappa Sastri).
4. Ascarya Chudamani (M. Ramakrishna Bhat, St. Joseph College, Bangalore).

(iii) *Composition.*—

(iv) *Grammar.*—

1. Sabda Smriti.
2. Karnataka Bhasha Bhushanam.

(v) *Prosody and Poetics.*—

Kannada Kaipidi (Mysore University Publication).

Final.

(i) *Prescribed Text-Books I.*—

1. Pampa Bharata: Aswasas 1 to 4 (both inclusive).
2. Lilavathi (Nemichandra)—Aswasas 3 to 6 (both inclusive.)

3. Ramaswamedha: Chapters 1 to 5 (both inclusive).
4. Panca Tantra (Durga Simha): Tantra I (pages 1-182).

(ii) *Prescribed Text-Books II.*—

1. Virata Parva (Kumara Vyasa)—Uttara Gograhana.
2. Bharatesa Vaibhava Part I, Upparige Sandhi (109 stanzas).
3. Mitravinda Govinda Nataka.
4. Girija Kalyana (Harihara): Aswasas 9 and 10.
5. Bharateyara Ithihasa by Narayana Sarma.

(iii) *History of Language and Literature.*—

1. Kavi Charite 3 Vols.—R. Narasimhachar.
2. Kelavu Kannada Kavigala Kala Vicara by Venkatasubbiah.
3. Kannada Kaipidi (Mysore University).
4. Muddana.
5. Abhinava Pampa (Karnataka Sangha, Dharwar).
6. Kannada Nudiya Jeevala (Joshi).

(iv) *Grammar.*—

1. Sabdamanidarpana (Kesiraja).
2. Sabdanusasana (Bhattakalanka).

(v) *Prosody and Poetics.*—

1. Kavirajamarga.
2. Chandombudhi by Nagavarma.
3. Apratima Vira Charite.
4. Rasaratnakara (Salva).
5. Kavisamaya (Ramanujaiengar).

VIDVAN (*d*).

Preliminary.

(i) and (ii) *Prescribed Text-Books I and II.*—

Same as for Vidvan (b)—Preliminary.

(iii) *Composition.*—

(iv) *Grammar I.*—Sabdasmriti (Nagavarma).

(v) *Grammar II.*—Karnataka Bhasha Bhushana.

(vi) *History of South India.*—

1. Vijayanagara Samrajya (Desai Panduranga Rao).
2. Karnataka Gata Vaibhava—(V. B. Alur).
3. Historical Portions from Nadoji Pampa (Timmappayya).
4. Kannada Nadina Charitre (Kannada Sahitya Parishat, Bangalore).

Final.

(i) and (ii) *Prescribed Text-Books I and II.*—

Same as for Vidvan (b)—Final.

(iii) *Advanced Grammar, Prosody and Poetics I.*—

Sabdamanidarpana by Kesiraja.

(iv) *Advanced Grammar, Prosody and Poetics II.*—

Same as for Vidvan (b)—Final.

(v) *History of Language and Literature.*—

Same as for Vidvan (b) Final.

Inscriptions.—

Sasana Padya Manjari (R. Narasimhachar) and Kannada Inscriptions 1 to 65 prescribed for the B.A. (Hons.) Degree Examination, Branch XI.

MALAYALAM.

VIDVAN (*a*)

Preliminary.

Poetry.—

1. Kannassa Ramayanam—Kishkindha Kandam (Selections in Malayalam Poetry for B.A. Degree Examination, Vol. I, Part II—University of Madras).
2. Bharatam—Virata and Drona Parvams—Ezuttacchan—Any Press.
3. Chitrayogam—4 to 6 Cantos by Vallathole, Cheruthuruthi, Cochin State.
4. Kirmiravadham—Attakkatha by Kottayam Thampuran—Any Press.

Drama—Mahaviracaritam by P. Parameswaran Pillai (Chandra Press, Chalai P.O., Trivandrum).

Prose.—

1. Rajatvam by K. M. Panikkar (B. V. Book Depot, Trivandrum).
2. Sahitya Nishkutam by P. Sankaran Nambiyar, M.A. (Deccan Publishing House, Huzur Road, Calicut),

Final.

Advanced Grammar, Prosody and Poetics.—

1. Lilatilakam. edited by Attur Krishna Pisharoti, Sritilakam, Poothole Pisharam, Trichur.
2. Kerala Paniniyam by A. R. Raja Raja Varma (B. V. Book Depot, Trivandrum).

3. Sahitya Darpanam, Part I—Published by the Malayalam Improvement Committee (Mangalodayam Press, Trichur).

4. Kavyajivitavrtti, Part II—University of Madras.

5. Vrttamanjari by A. R. Raja Raja Varma (Kamalalaya Printing Works, Trivandrum).

VIDVAN (*b*)

Preliminary.

Poetry.—

1. Kannassa Ramayanam — Kishkinda Kandam — Selections, Vol. I, Part II, University of Madras.
2. Krishnagatha — Rukminiswayamvaram by Cherusseri (Any Press).
3. Bharatam, Bhisma Parvam—Ezuttacchan (Any Press).
4. Parvati Panigrahanam (Government Press, Trivandrum).
5. Rajarshi by Govinda Pillai, Rajarshi Office, Trivandrum.
6. Unninilisandesam—Ed. by Attur Krishna Pisharoti, (Bharata Vilasam Press, Trichur).
7. Ambarisha Charitram—Attakkatha by Asvati Tirunal (Any Press).

Prose.—

1. Uttararamayana Gadyam, 2 parts—Published by Malayalam Improvement Committee (Mangalodayam Press, Trichur).
2. Meppattur Bhattattiri by Vadakkangure Raja Raja Varma, Vaikom, Travancore.
3. Lalita by R. Narayana Panikkar, B.A., L.T., (S. T. Reddiyar & Sons, Quilon).

Drama.—

Punciri by Dr. C. A. Menon. (Mangalodayam Press, Trichur.)

Grammar.—

1. Lilatilakam, ed. by Attur Krishna Pisharoti, Sritilakam, Poothole, Trichur.
2. Bhashadarpanam by Attur Krishna Pisharoti.
3. Bhasha Bhushanam by A. R. Raja Raja Varma. (B. V. Book Depot, Trivandrum).
4. Prayoga Deepika by P. K. Narayana Pillai. (S. R. V. Press, Quilon).

Final.

Poetry:—

1. Ramacaritam—18-25 Patalams--Madras University Publication.
2. Bhasha Naishada Campu—Part I. (B. V. Book Depot, Trivandrum).
3. Umakeralam—1-3 Sargams by Ullur—R. T. Pillai, Chalai, Trivandrum.
4. Kaliya Mardanam—Yamakakavyam by Kuttamath K. Kunhikrishna Kurup. (K. K. Memorial Committee, Tellicherry).
5. Kuchela Vrttam, Vanjippattu by Ramapurath Varier. (Any Press).
6. Kalakeyavadham—Attakkatha—edited by P. K. Nair, Accoth House, Chittur, Cochin State.

Drama.—

1. Karnan by N. P. Chellappan Nair, B. A., B. L. (B. V. Book Depot, Trivandrum).
2. Malayala Sakuntalam by A. R. Raja Raja Varma. (Kamalalaya Press, Trivandrum).

Advanced Grammar, Prosody and Poetics and History of Language and Literature—

1. Kerala Paniniyam by A. R. Raja Raja Varma. (B. V. Book Depot, Trivandrum).
2. Sahitya Darpanam, Part II—Malayalam Improvement Committee (Mangalodayam Press, Trichur).
3. Kavyajivitavrtti, Part I—Madras University Publication.
4. Vrttamanjari by A. R. Raja Raja Varma. (B. V. Book Depot, Trivandrum).
5. Nataka Pravesika by A. D. Harisarma, Ernakulam.
6. Sahitya Caritam by Attur, Sritilakam, Poothole, Trichur.
7. Kerala Bhasha Sahitya Caritram, Parts I to III by R. Narayana Panikkar, B.A., L.T. (V.V. Book Depot, Trivandrum).
8. Khanda Katha Prasthanam by M. P. Paul, Kottayam.
9. Tuncattu Ezuttacchan by P. K. Narayana Pillai (S. R. V. Press, Quilon).
10. Attakkatha or Kathakali—Madras University Publication.

VIDVAN *(d)*.

Preliminary.

Prescribed texts (A)—

Classical Poetry:

1. Kannassa Ramayanam—Balakandam—Edited by K. Parameswaran Pillai, M.A., Tampanoor, Trivandrum.

2. Krishnagatha by Cerusseri—From the beginning till the end of Kamsa salgathi (Any Press).

3. Unnineeli Sandesam, edited by Attur Krishna Pisharoti (B. V. Book Depot, Trivandrum).

Prescribed texts (B)—

Modern Poetry—

1. Mahabharatam—Ezuttaccan—Bhisma and Drona Parvams (Any Press).

2. Vicchinnabhisekam—Champu—(Punam) (Mangalodayam Press, Trichur).

3. Kesaviyam—First six sargams (S. T. Reddiar & Sons Quilon).

Drama.—

Manipravala Sakuntalam by Kerala Varma (B. V. Book Depot Trivandrum).

Prose.—

1. Uttara Ramayanam, Gadyam, Part I (Mangalodayam & Co., Trichur).

2. Bhutarayar by Appan Tampuran (V. M. Kuttikrishna Menon, Ayyanthole, Trichur).

Composition—No Text.

Grammar (A)—

1. Lilathilakam, edited by Attur Krishna Pisharoti (B. V. Book Depot, Trivandrum).

2. Vyakaranamitram by M. Seshagiri Prabhu.

Grammar (B)—

1. Basha Bhushanam by A. R. Raja Raja Varma, M. A.

2. Bhasha Darpanam by Attur Krishna Pisharoti, Poothole Trichur.

3. Sahitya Sahyam by R. Raja Raja Vama, M. A.

History of the Country and the Language.—

1. Koccirajya Caritram, Part I by K. P. Padmanabha Menon B. A., B. L. (M. Narayana Menon, Vakil, Ernakulam).

2. Malabar Gazetteer (Malayalam) — Government Press, Madras.

3. Tiruvitankur Caritram by R. Narayana Panikkar, B. A., L. T

4. Bhashayum Sahityavum by Attur Krishna Pisharoti (Madras University Publication).

Final.

Prescribed texts (A)—

1. Ramacaritam—1-25 Patalams (Madras University Publication).
2. Vadakkan Pattukal, Vol. I by Dr. C. Achyuta Menon (Madras University Publication).
3. Bhashanaishadha Champu — 2 Parts — Mazamangalam (Any Press).
4. Torana Yuddham by Kottarakkara Tampuran (S. R. V. Press, Quilon).

Prescribed texts (B)—

Poetry.—

1. Adhyatma Ramayanam—Ezuttaccan—Kishkindha and Sundara Kandams (Any Press).
2. Girija Kalyānam by Unnayi Varier—First 2 Padams (Government Press, Trivandrum).
3. Kālakēyavadham by Kottayattu Tampuran (Any Press).
4. Nalacaritam—Kathakali—2nd Day by Unnayi Varier.
5. Umakeralam—11 and 12 Sargams by Mahakavi Ullur S. Parameswara Ayyar, Jagati, Trivandrum.
6. Sahityamanjari, Part IV by Mahakavi Vallathole, Ceruthuruthi, Cochin State.

Prose.—

1. Indulekha by O. Chandu Menon (V.V. Press, Ernakulam).
2. Sahityanishkutam—P. Sankaran Nambiyar, M.A., (Deccan Publishing House, Calicut).

Composition.—No texts.

Advanced Grammar, Prosody and Poetics.—Texts (A)—

1. Kerala Paniniyam by A. R. Raja Raja Varma, M.A. (B. V. Book Depot, Trivandrum).
2. Prayogadipika by P. K. Narayana Pillai (S. R. Book Depot, Trivandrum).
3. Kerala Kaumudi by Kovunni Nedungadi, Teacher, Zamorin's College, Calicut.

Advanced Grammar, Prosody and Poetics—Texts (B)—

1. Sahitya Darpanam, Part I (Mangalodayam Press, Trichur).
2. Kavyajivitavrtti, Part I (University Publication).
3. Kavyalokam (University Publication).

4. Nataka Pravesika by A. D. Harisarma, Ernakulam.
5. Dravidavrttangalum avayute Desaparinamangalum by Appan Tampuran (V. M. Kutti Krishna Menon, Ayyanthole, Trichur).

History of Language and Literature.—

1. History of Malayalam Language and Literature. Parts I and II by R. Narayana Panikkar, B.A., L.T.
2. History of Malayalam Literature by P. Govinda Pillay (S. R. Pillay, Trivandrum).
3. Arya Dravida Bhashakalum avayute Paraspara Bandhavum by, Dr. L. A. Ravi Varma (Mangalodayam & Co., Trichur).
4. Novel Prasthanam by M. P. Paul, Kottayam.
5. Attakkatha or Kathakali by P. Krishnan Nayar (Madras University Publication).

Inscriptions.—

Viraraghava Cakravarthi Pattayam, edited by Dr. K. Goda Varma PH.D. (London), University of Travancore, Trivandrum.

Afzal-ul-Ulama Title Examination.

Preliminary.

Tafsir-ul-Manar, Volume II.
Jami'ut-Tirmidhi—1st Half.
Nukhbatul Fikr.
Al-mizan by Imam Sha'rani—1st Half.
Usulush Shashi.
Alhidayah-Ilas Siratil Mustaqim.
Al-Basayirun-Nusiriyya Fil Mantiq.
Tarikh Adab al-Lughat-al' Arabiyyah—Vol. I by Zaidan.
Al-Mu'allaqat-al.'Ashar, edited by Al-Shanqiti.
Fajr-al Islam.
An Nahvul Wadih Lil Madris-i-Thanawiyya (three volumes).
Almizbah Fil Ma'ani wal Bayyan Wal Badi.

Final.

Tafsir-i-Baidawi—Surah-i-Baqrah.
Tafsir-i-Itqan, Volume I.
Sahihul Bukhari—First five ajza.
Mu'watta—1st Half.
Muqaddima-i-Ibni Salah.
Miftahus Sunnat.

Bidayatul Mujtahid by Ibn Rushd—Volumes 1 and II.
Mussallamuth—Thabut.
Hujjat allah—Al Baligha-1st Vol.
Faysalut Tafraqah Baynal Islam waz Zandaqah by Al Ghazali.
Jawahirul Adab by Al-Hashimi.
Muhazaratu-Tarikhil-umamil Islamiyya by Al Khizri, Volume II.
Tarikh Adab-al-Lughatil Arabiyya by Zaydan, Volumes 2 and 3.
Sullamul-'ulum.
Falsafatu Ibn-i-Rushd (Faslul Maqal and Alkashf an Manabijil Adillah).
Al-Dhakhirah by Al-Tusi.
Dalailul-I-'jaz by Jurjani.
Kitabul Farq-baynal-Firaq by Abdul Qadir Baghdadi.

Afzal-ul-Atibba Title Examination.

Preliminary.

Kulliyat-i-Qanuni Shaykh
Kamilus Sana'ah, Vol. 1, Maqalahs 1, 2 and 3.
Mabadiut Tashrih wal Fasologiah wal Hygin.
Wajibatut Tabib by Duktur Abdul Aziz.
Nafisi-Fanni Thani.
'Umdathul Mutabbibin fi Fannis Saydalah.
Qawa'idu Hifzis Sehhat by Yuhanna Afandi.
Kitab Tashrih wa Manafi'ul A'za by Ghulam Jilani.
Miftahul Khazayin.
Dehli Ki Dawa Sazi.
Makhzani-i-Hikmat by Ghulam Jeelani-Hifzani-Sehhat and portions related to it.
Tarikhul Atibba.
Tabaqatul Atibba by Ibn-i-Abi Usaybi'ah.
Muqaddimai-Makhzanul Adwiyah.

The following books are recommended for study and reference :—

Kulliyath-i-Nafisi.
Kulliyath-i-Sadidi.
Nayyari-'Azam.
Kifayathul 'Awam fi Hifzis Sehhati wa Tadbiril Asqam.
Muhit-i-'Azam.
Mukhazinut Ta'Lim.
Qarabadin-i-Qadiri.

Final.

Sharhi-Asbab.
Kamilus Sana'ah.
Qanun-i-Shaykh—Amrazi-Sadar wa rih and Hummayath.
Kitabul Mu'ayanathi wal 'Alamati-Tashkhisiyah.
Kitabut Tashkhis, Parts I and II.
Lamahatus Sa 'adah Fi fannil Wiladah by Dr. 'Isa Basha Hamdi.
Al'ilajul Jarrahi.
Kitabul Jarahat.
Ta'limul Qabilah by Abdur Razzaq.
Tibbi-Qanuni—medical jurisprudence—Urdu.
Makhzani-Hikmat by Ghulam Jeelani.
Al'inayathu bit Tifi Fis Sehhati wal Maraz.
Kitabul Bathulujiah.
As-sirrul Maknun Fi Abhasit Ta'un.

The following books are recommended for study and reference:—

Al-Khulasatut Tibbiyah Fil Amrazil Batiniyah.
Iksir-i-Azam.
Risala-i-Amrazi Sibyan.
Tabib-i-Atfal.

Munshi-i-Fazil Title Examination.

Preliminary.

Persian Prose.—

Sih Nathr—Zuhuri—1st Nathr.
Waqa'i Ni'mat Khani Ali (2 Waqa'i).
Chahar Maqala by Nizami Samarqandi.

Persian Poetry.—

Asrar-Khudi by Dr. Sir Muhammad Iqbal.
Qasaid-i-Qa'ani by Ja'fari.
Diwani Hafiz Radif Alif, Ba and Dal.

Non-detailed Study.— Qissa-i-Haji Baba Isfahani.

Grammar, etc.— Kanzul Balaghat.

Islamic History.— Tarikhul Ummat, Volumes 1—3, Aslam, Jairajpuri.

Urdu Text-books.— Mawji Kawsar by Ikram.
Ibnul Waqt by Nazir Ahmad.

Final.

Persian Prose and Poetry.—

Jami by Ali Asghar Hikmat.
Javid Nameh—Iqbal.
Makhzan-i-Asrar Nizami.
Abul Fazl 1st Daftar.

History of Persian Language and Literature.—

Sukhan waran-i-Iran Dar' Asri Hazir, Vol. I.
Tarikh-i-Adabiyyati Iran—2 Vols. Published by Anjuman Taraqqi-i- Urdu.

Islamic History.—

Tarikhi Millat { Khilafat-i-Bani Umayyah, Khilafat-i-Abbasiyah } Published by Darul Musamifin.

Grammar, Rhetoric and Prosody.—

Khazinatul Fawaid, Volume II.

Urdu Text-books.—

Sirat-i-Sayyid Ahmad Shahid.
Athari-Iqbal by G. D. Rashid.

Adib-i-Fazil Title Examination.

Preliminary.

Urdu Prose and Poetry—.

Maqalat-i-Shibli—Vol. V.
Maqalat-i-Hali, Vol. I.
Bal-i-Jibrail.
Kulliyat-i-Akbar, Vol. I.
Abi-Hayat by Azad.
Hayat-i-Javid.
Sirat-i-Sayyid Ahmad Shahid.

Grammar, etc.—

Qawa-'idi-Urdu, by Abdul Haq.

Islamic History.—

Khutbat-i-Madras.
Khulafa-i-Rashidin.

Persian Text-books.—

Akhlaq-i-Muhsini.

TAMIL.

Palayatum Putiyatum by Dr. V. Swaminatha Ayyar, Tiruvateswaranpet, Triplicane, Madras.
Kristavamum Tamilum by Seeni Venkataswami, Mylapore, Madras.

MALAYALAM.

1. Mawlana Muhammad Ali by K. M. Seethi, B. A., B. L., Chandrika Press, Post Tellicherry.

2. Nurjahan by Sardar K. M. Panikkar, B. V. Book Depot, Trivandrum.

Final.

Urdu Prose and Poetry.—

Muqaddima-i-Shir wa Sha'iri.
Mawazina-i-Anis wa Dabir.
Ifadat-i-Mahdi.
Yadgar-i-Ghalib (Excluding Persian Portion).
Qazaid-i-Zawq.
Intikhabi-Kalam-i-Mir, by Abdul Haq.
Zarbi-Kalim.
Tahzibul Akhlaq, Vol. II.

History of Language and Literature.—

Tarikh-i-Adabiyat-i-Urdu.
Mawji Kawsar by Ikram.

Islamic History.—

Tarikhi—Millat-Khilafat-i-Bani Umayyah.
Khilafat-i-'Abbasiyah.

Persian Text-book,—

Detailed Study of Hali and his works.

TAMIL.

Life of Caldwell by R. P. Sethu Pillai (Publishers: Hilal Press, Tinnevelly).

Palavakai—Katturaikal by T. A. Kanakasabapathi—Palaniyandi Pillai & Co., G. T. Madras.

MALAYALAM.

1. Al-Faruq, by Abdus Salam, B. A.—Islamiah Publishing House, Vakkam, Anjengo Post, Travancore.

2. Ayesha or the Daughter of Smyrna by Abdush Shukur, B. A., C. M. Press, Edana Post, Travancore.

Tabib-i-Kamil Title Examination.

Preliminary.

Mufarribul Qulub (Persian).
Mizan ut Tib Maqala. 1 and 2.
Tarjuma-i-Kulliyath-i-Qanun.
Tarjuma-i-Kamilus Sana'ah, Vol. 1, Maqalas 1, 2 and 3.
Tashrih-i-Kabir by Kabiruddin.
Tashrih wa Manafi'ul 'Aza.
Tarjuma-i-Nafisi—'Ilmul Adwiyah, Parts 1 and 2. By Hakim Kabiruddin.
Muqaddima-i-Makhzanul Adwiyyah.
Makhzanul Adwiyyah by Ghulam Jeelani.
Dehli Ki Dawa Sazi.
Miftahul Khaza'in.
Tarjuma-i-Kulliyath-i-Qanun, Vol. 2.
Makhzan-i-Hikmat by Ghulam Jeelani.
(Portions related to Hafzani-Sihat).
Tarikhul Atibba.

The following books are recommended for study and reference :—

Tarjuma-i-Kulliyath-i-Nafisi.
Tarjuma-i-Kulliyath-i-Sididi.
Rumuzi 'Azam.
Muhit-i-'Azam.
Makhazinut Ta'alim.
Qarabadin-i-Qadri.

Final.

Kitabut Tashkhis, Parts 1 and 2.
Tarjuma-i-Sharhi Asbab (Tarjuma-i-Kabir).
Kitabul Bathulujia.
Tibb-i-Akbar (Persian).
Iksir-i-'Azam (Amradi Muta'addi).
Makhzani Hikmat (Amradi Muta'addi).
Tarjuma-i-Hummayath-i-Qanun, Parts 1 and 2.
Tarjuma-i-Kamilus Sana'ah.
Kitabul Jirahat.
Kitab 'Aaml-i-Ihtiqan.
Tibbi-Qanuni—medical Jurisprudence.
Ta'limul Qabilah.
Tabib-i-Atfal.
Risalai-Amrad-i-Sibyan.

The following books are recommended for study.—

Iksir-i-Azam.
Makhzan-i-Hikmat.

Malpan Title Examination.

Preliminary.

1. The Gospel of St. Luke.
2. The Breviary of the Syro-Chaldean Catholics of Malabar for Monday and Tuesday (St. Joseph's Press, Mannanam P. O., Travancore).

or

The Breviary of the Syro-Malankara Catholics or Jacobites for Monday and Tuesday (St. Joseph's Press, Tiruvella P. O., Travancore).

3. The History of Syriac Literature by Dr. Wright (A. & C. Black, London).
4. The History of the Syrian Church in India.

The following books are recommended for the study of the History of the Syrian Church in India :—

1. Mar Thoma Christians, Vols. I and II (St. Joseph's Press, Mannanam P. O., Travancore).
2. The Indian Church of St. Thomas by E. M. Philip (C. M. S. Press, Kottayam P. O., Travancore).
3. The Syrian Church of Malabar and its Cultural Contribution by Rev. Fr. Placid, T. O. C. D., PH.D., D. D., D. C. L. and K. E. Job, M.A., L.T. (St. Joseph's Press, Mannanam P. O., Travancore).
4. Christianity in India by Mackenzie (Government Press, Trivandrum, Travancore).
5. India and the Apostle St. Thomas by A. E. Medlycott (David Nutt, 57-59, Long Acre, London).
6. St. Thomas, the Apostle in India by F. A. D'Cruz, K.S.G. (Hoe & Co., Madras).
7. The Antiquities of San Thome by Rev. Fr. Hosten, S.J. (Baptist Mission Press, Ranchi or The Vicar General, Catholic Bishop's House, Mylapore, Madras).

Grammar.—A Compendious Syriac Grammar by Noldeke-(Williams Norgate, Ltd., 36, Great Russell Street, London, W. C.1.)

Final.

1. The Acts of the Apostles.
2. The First Epistle to the Corinthians.
3. The Breviary of the Syro-Chaldean Catholics of Malabar for Thursday, Friday, Saturday and Sunday (St. Joseph's Press, Mannanam P. O., Travancore).

or

The Breviary of the Syro-Malankara Catholics or Jacobites for Thursday, Friday, Saturday and Sunday (St. Joseph's Press, Tiruvella P. O., Travancore).

4. Kthobo D'Keenotho (St. Thomas Press, Kottayam P. O., Travancore).
5. The History of the Syriac Language.
6. The History of the Syrian Church in India.

Besides the books recommended for the Malpan Preliminary Examination the following books are recommended:—

1. The Lesser Eastern Churches by Adrian Fortescue.
2. The Catholic Eastern Churches by Donald Attwater.
3. The Dissident Eastern Churches by Donald Attwater.

Grammar.—A Compendious Syriac Grammar by Noldeke, (Williams Norgate, Ltd., 36, Great Russell Street, London, W.C.I.)

Soppar Title Examination.

Preliminary.

I. SYRIAC (MAIN).

1. The Epistle to the Hebrews.
2. The Breviary of the Syro-Chaldean Catholics of Malabar for Thursday (Psalms excluded).

or

The Breviary of the Syro-Malankara Catholics or Jacobites for Thursday (Psalms excluded).

3. The History of Syriac Literature by Dr. Wright (A. & C. Black, London).
4. The History of the Syrian Church in India.

The same as those recommended for the Malpan Preliminary Examination.

Grammar.—A Compendious Syriac Grammar by Noldeke, (Williams Norgate, Ltd., 36, Great Russell Street, London, W. C. I.).

II. HEBREW (SUBSIDIARY).

Preliminary Examination.—

1. Genesis: Chapters XIII—XXV (both included).
2. Book of Proverbs: Chapters I—V (both included).
3. Book of Jonah—the whole.
4. Grammar: Book of Hebrew Grammar by Michael Adler.

Final.

I. SYRIAC (MAIN)

1. The Book of Isiah, Chapters I—XXXIX.
2. The Book of Treasures by Job of Edessa (A. Mingana, F. Heffer and Sons, Cambridge, England).
3. Kthobo D'Hasho Phorukoyo. (Mar Julius Press, Pampakada, Travancore).
4. Kthobo D'Ad—Eede Yakuboye (Mar Julius Press, Pampakada, Travancore).
5. Kthobo d'Keenotho. (Mar Thoma Press, Kottayam, Travancore).
6. The History of Syriac Language.
7. The History of the Syrian Church in India.

The same as those recommended for the Malpan Final Examination.

Grammar.—A Compendious Syriac Grammar by Noldeke, (Williams Norgate, Ltd., 36, Great Russell Street, London, W. C. I.)

II. HEBREW (SUBSIDIARY).

Final Examination.—

1. First Book of Kings: Chapters I—XV (both included).
2. Lamentations (whole).
3. Book of Canticles.
4. Grammar: Davidson's Hebrew Grammar.

ORIENTAL TITLES EXAMINATIONS, 1950.

ENTRANCE TEST FOR TITLES IN ARABIC AND PERSIAN.

The same as for 1949.

SANSKRIT.

Siromani Title Examination.

Preliminary.

GENERAL PART.

PAPER I.

Vis'vanātha Pañcānana-Muktāvali: with Dinakari for Sabdakaṇḍa.
Gautamadharmasūtras, first nine Paricchedas.
Manu-Smṛti, Chapter 9; text only.

PAPER II.

Jaiminiyanyāyamālāvistara from beginning to the end of Chapter III, Pāda I.

Mimāṁsānyāyaprakāśa of Āpodeva.

PAPER III.

Siddhāntakaumudi—Pūrvārdha only, omitting Taddhita.

Ṛgveda: Macdonell's Vedic Reader, I to X hymns (both inclusive) Text only.

Kaṭhopaniṣad—Text only.

SPECIAL PART.

BRANCH I—*Mīmāṁsā*.

PAPER I.

Taittirīya Saṁhitā with Sayaṇa's Bhaṣya, Khaṇḍa I, Prapāṭhaka I.
Āpastamba S'rauta-Sūtra with Rudradatta's Vṛtti—Pras'nas I to V (both inclusive).

PAPER II.

Bhāṭṭadipikā from beginning to end of the third Pāda of the third Adhyāya.

Aitareya Brāhmaṇa with Sāyaṇa Bhaṣya, fourth Pañcikā.

PAPER III.

Sāstradipikā of Pārthasarathi Mis'ra from the fourth Pāda of the third Adhyāya to the end of sixth Adhyāya.

BRANCH II—*Vedanta*.

Advaita.—

PAPER I.

Brahmasūtras with S'aṅkara's Bhāṣya.

PAPER II.

Bhāmati Catussūtri.

Pañcapādikā with Vivaraṇa, First Varṇaka.

Māṇḍūkyopaniṣad with Gauḍapāda-Kārikas and S'ankara's Bhāṣya.

PAPER III.

Is'a, Kena, Pras'na, Chāndōgya (Adhyāya VI), and Bṛhadāraṇyakaupaniṣad (Adhyaya I), with S'aṇkara's Bhāṣya.

Bhagavadgitā with S'ankara's Bhāṣya.

Viśiṣṭadvaita.—

PAPER I.

Brahmasūtras with S'ri-Bhaṣya.

PAPER II.

Bhagavadgitā with Rāmānuja's Bhāṣya.

Bṛhadrāraṇyakopaniṣad with Raṅgaramānuja's Bhāṣya.

PAPER III.

S'rutaprākaṣikā—Jijñāsādhikarana.

Dvaita.—

PAPER I.

Brahmasūtras with Madhvācārya's Bhāṣya.

Tattvaprakas'ikā of Jayatirtha.

PAPER II.

Gitātātparyanirṇaya with Jayatirtha's Tika.

Madhvabhāṣya on the Bṛhadāraṇyakopaniṣad.

PAPER III.

Madhvāchārya's Aṇuvyākhyā with Jayatirtha's Nyāyasudhā, Jijñāsadhikaraṇā only.

BRANCH III—*Nyaya.*

PAPER I.

Gautama's Nyāyasūtras with Vātaṛāyāna's Bhāsya, Chh. I and II.

Kaṇāda's Vais'eṣikasūtras, Text only.

PAPER II.

Jagadis'a's Pañcalakṣani and Simhavyāghri.

Gadādhara's Caturdas'alaksaṇi :

(*a*) From beginning up to the end of Dvitiyasvalakṣaṇa.

(*b*) Kūṭaghatitalakṣaṇa.

(*c*) Kūṭāghaṭitalakṣaṇa.

(*d*) Vyadhikaraṅa-dharmāvacchinnābhava-khaṇḍana grantha

PAPER III.

Gadādhara's Pakṣatā : Sārvabhaumānta.

Gadādhara's Siddhāntalaṣkaṇa, (whole).

BRANCH IV—*Vyakarana.*

PAPER I.

Paribhaṣendus'ekhara, (whole).

PAPER II.

Praudhamanoramā, text from beginning to end of Avyayibhāva.

Siddhāntakaumudi Kṛt and Taddhita sections.

PAPER III.

S'abdaratna from beginning to end of Stripratyaya.

BRANCH V—*Sahitya.*

[Common to Vidvan (*a*).]

PAPER I.

Bāṇa's Kādambari from Mahas'vetāvṛttānta to the end of Pūrvārdha.

S'ri Harṣa's Naiṣadha. Cantos 10 and 11.

Kumārasambhava, Cantos 1 to 5 (inclusive).

Nilakaṇṭhavijaya of Nilakaṇṭhadhadikṣita, Ucchvāsa III only.

PAPER II.

S'ākuntala.

Mālatimādhava.

Mṛcchakaṭika.

Mudrārākṣasa.

PAPER III.

Daṇḍin's Kāvyādars'a.

Siddhāntakaumudi, Pūrvārdha to the end of Apatyādhikāra.

BRANCH VI—*Jyotisa.*

PAPER I.

Bhāskara's Bijagaṇita.

Bhāskarācārya's Lilāvati, whole omitting Parikarmāṣṭaka, Kuṭṭaka and Pāsa.

PAPER II.

Kṣetramiti by Durgāprasāda, Books III and IV only.

Trikoṇamiti.

PAPER III.

Golaprākas'a Capiyatrikoṇamiti and Golarekhāgaṇita only.

BRANCH VII—*Ayurveda.*

PAPER I.

Aṣṭangahṛdaya, S'ārira, Nidāna and Cikitsā Sthānas.

PAPER II.

Carakasaṁhitā, Sūtrasthāna.

Sus'rutasaṁhitā, Sūtrā and Sārira Sthānas.

Pratyakṣas'ārira by Mahamahopadhyaya Gananath Sen.

PAPER III.

Rasaratnasamuccaya, first eleven chapters.

Final Examination.

BRANCH I—*Mimamsa.*

PAPER I.

S'ābarabhāṣya, Ch. I with Kumārila's Vārtika, Ch. I, omitting Slokavārtika.

PAPER II.

Bhaṭṭadipikā, Uttaraṣaṭka only.

PAPER III.

Nyāyaratnamāla of Pārthasārathi Mis'ra.

PAPER IV.

Bhāṭṭarahasya.

BRANCH II—*Vedanta.*

Advaita.—

PAPER I.

Siddhāntabindu—text only, (whole.)

Tattvapradipikā of Citsukha, first Pariccheda only.

PAPER II.

Advaitasiddhi; Pariccheda I from beginning to end of Āgamabādhoddhāra.

Advaitasiddhi, Pariccheda II, Akhaṇḍārthavāda.

PAPER III.

Laghucandrikā from beginning to end of Upādhi and Akhaṇḍārthavāda section.

PAPER IV.

Common to the three systems of Vedanta: Sāṅkhyakārika with Gauḍapādavṛtti, Patañjali's Yogasūtra with Bhojavṛtti, Advaitaparibhasā, Nitimāla, Das'aprakaraṇas (omitting Karmanirṇaya and Viṣṇutattvanirṇaya).

Vis'iṣṭādvaita.—

PAPER I.

Vedārthasaṅgraha.

Siddhitraya of Yāmunācārya.

PAPER II.

Satadūṣaṇi with Caṇḍamāruta, first fifteen Vādas only.

PAPER III.

Nyāyasiddhañjana, first five Paricchedas (to the end of Buddhi-pariccheda).

Dvaita—

PAPER I.

Nyāyamṛta.

PAPER II.

Nyāyāmṛtataraṇgiṇi, first Pariccheda only.

PAPER III.

Bhedojjivana.

BRANCH III—*Nyaya.*

PAPER I.

Udayana's Nyāyakusumāñjali.

PAPER II.

Gadādhara's Vyutpattivāda.

Khaṇḍadeva's Bhāttarahasya, to the end of Prathamā.

PAPER III.

Gadādhara's Avayava, from beginning to end of Pratijna.

Gadādhara's Sāmānyanirukti.

PAPER IV.

Gadādhara's Satpratipaksa-vibhājaka.

Gadādhara's Avacchedakanirukti.

Gadādhara's Savyabhicārasāmānyalakṣsaṇa.

BRANCH IV—*Vyakarana.*

PAPER I.

Mahābhaṣya, Navāhnika.

PAPER II.

Laghus'abdendus'ekhara, to the end of Stripratyaya (up to and excluding Kāraka).

PAPER III.

Laghumañjūṣa, sections containing Subarthavicāra and Nāmārthavicāra.

PAPER IV.

Gadādhara's Vyutpattivāda from beginning to end of Prathamā.

Vaiyākaraṇabhūṣaṇasāra, all sections except Subarthavicarā and Nāmārthavicāra.

BRANCH V—*Sahitya.*

[Papers I and II common to Vidvan (*a*).]

PAPER I.

Siddhāntakaumudi, Uttarārdha omitting Uṇādi, Vaidika and Svara Prakaraṇas.

Vararuci's Prākṛta Prakās'a.

Vṛttaratnākara, Chapters 1 to 4.

PAPER II.

Vāmana's Kāvyālaṅkārasūtravṛtti.

Mammaṭa's Kāvyaprakās'a.

PAPER III.

Dhvanyāloka.

Udbhaṭa's Kāvyālaṃkārasāra.

PAPER IV.

Rasagaṇgadhara.

Chitramimāṁsā.

BRANCH VI—*Jyotisa.*

PAPER I.

Siddhāntas'iromaṇi, (whole).

PAPER II.

Bṛhatsaṁhita, (whole).

Bṛhajjātaka, (whole).

PAPER III.

Muhūrtacintāmani, (whole).

Pras'namārga, Pūrvārdha only.

Grahalāghava, from beginning to end of Chandragrahanādhikāra.

PAPER IV.

Sūṛyasiddhānta, (whole).

Aryabhatiya, (whole).

BRANCH VII—*Ayurveda.*

PAPER I.

Carakasaṁhita, whole omitting Sūtrasthāna.

PAPER II.

Sus'rutasaṃhitā. whole omitting Sūtra and Sārīra Sthānas.

PAPER III.

Aṣṭāngahṛdaya, Kalpa and Uttara Sthānas.
Rasaratnasamuccaya, Chapters 12 to end.
Rasahṛdaya of Govindapāda.

PAPER IV.

Mādhavanidāna.
Siddhāntanidāna.

MARATHI.

The same as for 1949.

HINDI.

The same as for 1949.

TAMIL.

VIDVAN (*a*).

Preliminary and Final.

The same as for 1949.

VIDVAN (*b*).

Preliminary.

1. *Poetry.*—(Prescribed Text-books in the main language I).—

Tiruvarangakkalambakam. Meenakshiammai Pillaittamil. Tanjaivanan Kovai. First Ula in 'Moovar Ula.' Padmagirinathar Tenral Vidu Toothu. Kalingattupparani.

2. *Poetry.*—(Prescribed Text-books in the main language II).—

Paranjoti Tiruvilaiyadal—Tiruvalavaykandam. Yasodara Kavyam. Tirukkural—Arattuppal. Villi Bharatam—Udyoga Parvam. Mana Vijayam—V. G. Suryanarayana Sastri.

3. *Composition in the main language—Prose.*—

Katturaittirattu—N. M. Venkatasami Nattar. Thiruvalluvar—T. Celvakesvaraya Mudaliar. Udayanan Charitram—Dr. V. Swaminatha Ayyar. Matanga Choolamani—Swami Vipulananda.

4. *Grammar I.*—

Nannul—Mylainathar Urai. Nambi Agapporul. Purapporul Venba Malai.

5. *Grammar II.*—(Prosody and Poetics).—

Yapparunkalakkarikai. Dandi Alankaram (omitting Collani). Ilakkanavilakkam—Pattiyal.

6. *Subsidiary Sanskrit.*

Final.

Poetry.—

1. Purananuru (101—200).
2. Akananuru—Manimitai Pavalam (201—250).
3. Kalittokai—Neytarkali (1—30).
4. Kuruntogai (301—400).
5. Pattinappalai.
6. Patirrupattu 4th and 5th tens.
7. Tirukkural—Porutpal.
8. Silappatikaram—Pukarkkandam—(omitting Arangerrukatai).
9. Tiruvacakam—Tiruccatakam.
10. Kambar—Yuddhakandam—Kumbhakarnan Vadaippadalam.
11. Tiruvaimoli—3rd ten with Idu.
12. Periyapuranam—Ilaimalintacarukkam.

Grammar.—

1. Tol. Eluttu—Naccinaikkiniyar.
2. Tol. Col.—Senavaraiyar.
3. Tol. Porul—(Agattinaiyiyal, Purattinaiyiyal, Poruliyal)—Naccinarkkiniyar.
4. Tol. (Meyppattiyal, Uramayiyal and Marapial) Perasiriyar.
5. Veeracoliyam (Alankarappadalam).

Books for Consultation.—

1. Caldwell's Comparative Grammar—Introduction.
2. Tamilmolivaralaru—By V. G. Suriyanarayana Sastri.
3. Tamil Araiccittokuti—By M. Raghava Ayyangar.
4. Tamil Varalaru—Parts 1 and 2—K. S. Srinivasa Pillai.
5. Seventeenth Century Poets—Somasundara Desikar.
6. Dravidic Pronouns—V. Venkatarajulu Reddiar.

VIDVAN (*d*).

The same as for (b) with the following additions :—

Preliminary.

History of South India.—

1. Seran Senguttuvan—M. Raghava Ayyangar.
2. Pandiar Varalaru—T. V. Sadasiva Pandarattar.
3. Pallavar Varalaru—M. Rajamanickam Pillai.
4. Gangai Konda Cholan—T. N. Subramanyam.

Final.

The same as for (*b*). Inscriptions: The same as for 1949.

TELUGU.

VIDVAN (*a*).

Preliminary and Final.

The same as for 1949.

VIDVAN (*b*)

Preliminary.

Poetry.—

The same as for 1949 with the change that *for* (6) Druvacharitra *substitute* Andhrabhavishyaparvamu by Malladi Suryanarayana Sastri, first two Asavasas.

Prose.—

The same as for 1949 with the change that *for* (2) Vyasamala *substitute* Essays in Telugu by Munimanickyam Narasimha Rao, Bhaskarapuram, Masulipatam.

Drama.—

The same as for 1949 with the change that *for* (1) Venisamharamu *substitute* Uttararamacharitra by Malladi Suryanarayana Sastri, Agraharam, Dowlaishwaram.

Grammar, Prosody and Poetics.—

The same as for 1949.

Final.

Poetry.—

The same as for 1949.

Prose.—

The same as for 1949 with the change that *for* (2) Desayatrakathalu *substitute* Andhradesamu Videsiya Yatrikulu by B. V. Krishna Rao, Member, Religious Endowments Board, Madras.

Drama.—

The same as for 1949 with the change that *for* (1) Mudrarakshasamu *substitute* Sakuntalamu by K. Kanakamma, Bezwada.

Grammar, Prosody and Poetics, History of Language and Literature.—

The same as for 1949.

VIDVAN (*d*).

Preliminary.

Prose, Poetry and Drama.—

The same as for Vidvan (*b*).

Grammar I and II, History of South India.—

The same as for 1949.

Final.

Prose, Poetry and Drama.—

The same as for Vidvan (*b*).

Advanced Grammar, Prosody and Poetics I and II.—

The same as for 1949.

History of Language and Literature.—

The same as for Vidvan (*b*).

Inscriptions.—

The same as for 1949.

KANNADA.

The same as for 1949.

MALAYALAM.

VIDVAN (*a*).

Preliminary.

Prescribed text-books in the Selected Language.

PAPER I.

1. Kannassa Ramayanam—Kishkindha Khandam—Universi Selections for B.A., Vol. I, Part 2.
2. Bharatam—Viratam and Drona Parvams—Any Press.

PAPER II.

1. Kalakeya Vadham—Attakkatha by Kottayathu Tampuran—Any Press.
2. Chitrayogam—4 to 6 Cantos, Vallathole, Cheruthuruthi, Cochin State.

Drama.—

1. Uttararamacaritam by C. Chattukutti Mannadiyar—Mangalodayam Press, Trichur.
2. Othello by M. R. Nayar, c/o Mathrubhumi, Calicut.

Prose.—

1. Prabhandha Manjari by M.A. Balakrishna Warriyar, S.R Book Depot, Trivandrum.

Final.

Grammar.—

1. Lilatilakam—By Attoor Krishna Pisharoti, Poothole Pisharam, Trichur.

2. Kerala Paniniyam—By A. R. Raja Raja Varma, B. V. Book Depot, Trivandrum.

Prosody and Poetics.—

1. Sahitya Darpanam, Part I—Malayalam Improvement Committee, Mangalodayam Co., Trichur.
2. Kavyajeevitha Vritti, Part II—By P. Krishnan Nayar, Madras University Publication.
3. Vrittamanjari—By A. R. Raja Raja Varma, Kamalalaya Press, Trivandrum.

VIDVAN (*b*)

Preliminary.

Prescribed Text-Books I—Poetry.—

1. Ramacaritam—1 to 4 Patalams (both inclusive).
2. Kannassa Ramayanam—Kishkinda Khandam—Vol. I, Part II, Madras University Selections.
3. Krishnagatha—Rukminiswayamvaram—By Cherusseri. Any Press.
4. Unnineelisandesam, Edited by Attur Krishna Pisharoti.
5. Bhasha Naishadham—Campu, Part I (P. Padmanabha Menon, B.A., B.L., Ernakulam).

Prose.—

Uttararamayanam, Gadyam, 2 Parts—Mangalodayam Co., Trichur.

Prescribed Text-Books II—Poetry.

1. Bharatam—Bhishma Parvam, Ezuttaccan, Any Press.
2. Parvati Panigrahanam—Government Press, Trivandrum.
3. Ambarishacaritam—Attakkatha—Aswati Tirunal, Any Press.
4. Kannuneertulli—Nalappat Narayana Menon, Vanneri Book Depot, Punnayurkulam, South Malabar.
5. Rugmangada Caritam Kavyam—1st Sargam—S.R. Book Depot, Trivandrum.
6. Narumottukal—Edited by P. V. Krishnan Nayar, Maharaja's College, Ernakulam.

Prose.—

1. Ceraman Perumal—K. Krishna Menon, Mathrubhumi, Calicut.
2. Duradarsiniyal Kute—K. Raman Nambiyar, Mangalodayam Co., Trichur.

Drama.—

1. Othello, M. R. Nayar, c/o Mathrubhumi, Calicut.
2. Ascarya Cudamani—Kunhikuttan Tampuran, Mangalodayam Co., Trichur.

Grammar.—

1. Kerala Paniniyam (Pitika), A. R. Raja Raja Varma, B. V. Book Depot, Trivandrum.
2. Lilatilakam—Ed. Attur Krishna Pisharoti, Poothole Pisharam, Trichur.

Prosody and Poetics.—

1. Bhashadarpanam—By Attur Krishna Pisharoti, Poothole Pisharam, Trichur.
2. Bhasha Bhushanam—By A. R. Raja Raja Varma, B. V. Book Depot, Trivandrum.
3. Kavyajeevitha Vritti, Part I—By P. Krishnan Nair, Madras University Publication.

Final.

Prescribed Text-Books I.—

1. Rama Caritam—6 to 10 Patalams—University Selections.
2. Unnineelisandesam—Edited by Attur Krishna Pisharoti, Poothole Pisharam, Trichur.
3. Krishna Gatha—Soubhadrikatha— Cherusseri, Any Press.
4. Bhasha Naishada Campu, Part II—By P. Padmanabha Menon, B. A., B. L., Ernakulam.
5. Kalakeyavadham Attakkatha—Edited by P. Krishnan Nair, University of Madras.

Prescribed Text-Books II.—

1. Kesaviyam, 9, 10 and 11 sargams (Kavya)—By K. C. Kesava Pillai, Reddiyar Press, Quilon.
2. Kalpasakhi—By Ullur S. Parameswara Ayyar, Jagadi, Trivandrum.
3. Amma—By Balamani Amma, Vanneri Book Depot, Punnayurkulam, S. Malabar.

Drama.—

Viranidhanam—By M. N. Parameswaran Pillai, B.A., S. R. Book Depot, Trivandrum.

Sakuntalam—Vallathole—Cheruthuruthi, Cochin State.

Grammar.—

Kerala Paniniyam—By A. R. Raja Raja Varma—B. V. Book Depot, Trivandrum.

Prayogadeepika—By P. K. Narayana Pillai—S.R.V. Press, Quilon.

Prosody and Poetics.—

1. Sahitya Darpanam, Part II—Mangalodayam Press, Trichur.
2. Kavyajeevitha Vritti, Part II, P. Krishnan Nayar, Madras University Publication.
3. Vrittamanjari—Kamalalaya Press, Trivandrum.
4. Natakapravesika—By A. D. Harisarma, Chittoor Road, Ernakulam.

History of Literature.—

1. Sahitya Caritam—By Attur Krishna Pisharoti, Poothole Pisharam, Trichur.
2. Kerala Bhasha Sahitya Caritam—By R. N. Panikkar, Parts I to III—V.V. Book Depot, Trivandrum.
3. Khanda Kathaprasthanam—By M. P. Paul, Kottayam.
4. Tunchath Ezuttaccan—By P. K. Narayana Pillai, S.R.V. Press, Quilon.
5. Attakkatha—By P. Krishnan Nair, Madras University Publication.

VIDVAN (*d*).

The same as for 1949.

Afzal-ul-Ulama, Afzal-ul-Atibba, Munshi-i-Fazil, Adib-i-Fazil and Tabib-i-Kamil Titles Examinations.

The same as for 1949.

Malpan and Soppar Titles Examinations.

The same as for 1949.

ORIENTAL TITLES EXAMINATIONS, 1951.

SANSKRIT.

The same as for 1950.

MARATHI.

The same as for 1950.

HINDI.

The same as for 1950.

TAMIL.

VIDVAN (*a*).

Preliminary and Final.

The same as for 1950.

VIDVAN (*b*).

Preliminary.

Prescribed Text-books in the Main Language I.—

Tirukkural—Arattuppal.
Tiruvilaiyadal—(Paranjoti)—Alavai Kandam—Padalams 1 to 8.
Villi Bharatam—Udyoga Parvam.
Prabhulinga Leelai—to the end of Prabhu Devar vanda katai.
Tanjaivanan Kovai.
Kalingattupparani.

Prescribed Text-books in the Main Language II.—

Tiruvaranga Kalambakam.
Meenakshiammai Pillai-tamil.
Muvar Ula (1st Ula).
Padamagiri Natar Tenral Vidu tutu.
Mana Vijayam: V. G. Suryanarayana Sastri.

Composition in the Main Language—Prose.—

Katturai tirattu: N. M. Venkataswami Nattar.
Tiruvalluvar: T. Chelvakesavaraya Mudaliar.
Udayanan Charitam: Dr. V. Swaminatha Ayyar.

Grammar I.—

Nannul—Kandikai.
Purapporul Venba Malai—to the end of Vahai-p-padalam.
Nambi Agapporul.

Grammar II—Prosody and Poetics.—

Yapperungalakkarikai.
Tandiyalankaram—omitting Sol-ani.

Subsidiary: Sanskrit.—

Final.

Prescribed Text-books I.—

Purananuru—101 to 200.
Ahananuru—Manimidai-p-padalam—201 to 250.

Kalittokai—Neydal—1 to 30.
Kuruntokai—331 to 400.
Pattinappalai.
Patirruppattu—4th and 5th Pattu.

Prescribed Text-books II.—

Tirukkural—Porutpal.
Silappadikaram—Puhar Kandam.
Chintamani—Kantaruva Tattaiyar Ilambakam.
Perunkatai—Ilavana Kandam.
Periyapuranam—
Tatuttatkonda Puranam.
Eyar kon kali kamanayanar puranam.
Vellanai Carukkam.
Kambaramayanam—Ayodhya Kandam to the end of Nagar ningu padalam.

Grammar I.—

1. Tolkappiyam—Eluttatikaram—Nacchinarkiniyar.
2. Tolkappiyam—Sollatikaram—Senavaraiyar.

Grammar II.—

1. Tolkappiyam—Porulatikaram—Ahattinai-iyal, Purattinai-iyal, Porul-iyal—Nachinarkiniyar.
2. Tolkappiyam—Porulatikaram—Meyppattiyal, Uvamai-iyal, and Marapiyal—Perasiriyar.

History of Literature.—

Books recommended.—

1. Caldwell: Comparative Grammar—Introduction.
2. Tamil Mozhi Varalaru: V. G. Suryanarayana Sastri.
3. Tamil Varalaru, Parts I and II: K. S. Srinivasa Pillai.
4. Tamil Araicci Tokuti: M. Raghava Ayyangar.
5. Tamil Varalaru, Part I: R. Raghava Ayyangar (Annamalai University Publication).
6. 17th Century Poets: S. Somasundara Desikar.

VIDVAN (*d*).

Preliminary.

The same as for Vidvan (*b*) with the following addition :—

History of South India.—

Books recommended for study.—

Ceran Senguttuvan: M. Raghava Ayyangar.
Pandyar Varalaru: T. V. Sadisiva Pandarathar.
Pallavar Varalaru: M. Rajamanikkam Pillai.
Cholar Varalaru in 3 parts: M. Rajamanikkam Pillai.

Final.

The same as for Vidvan (*b*) with the following addition.—

Inscriptions.—

The same as for 1950.

TELUGU.

The same as for 1950 except that for Vidvan (*b*) and (*d*) Final *substitute* "Sahitya-Samalochanamu" by P. V. Hanumantha Rao *for* "Andhradesamu: Videsiyayatrikulu" by Bh. V. Krishna Rao.

KANNADA.

VIDVAN (*a*).

Preliminary.

(i) *Prescribed Text-books I.*—

1. Gadayuddha by Ranna (Whole).
2. Kadambari Sangraha (Whole). (Mysore University Publication).
3. Panchatantra (Durga Simha)—3rd Tantra.

(ii) *Prescribed Text-books II.*—

1. Mitravinda Govinda (Singararya).
2. Mudra Manjusha (Kempu Narayana).
3. Chikka Devaraya Vamsavali (Tirumalarya).
4. Vimarse, Part I (Masti Venkatesa Iyengar).
5. Sahitya Mattu Vimarse (Bendre, D. R.).

(iii) *Composition.*—

Final.

(i) *Prescribed Text-books I.*—

1. Pampa Bharata—Aswasas 1 to 4 (both inclusive).
2. Dharmamrita by Nayasena—Aswasas 1 to 5 (both inclusive).
3. Ramaswamedha (whole).

(ii) *Prescribed Text-books II.*—

1. Harischandra Kavya Sangraha (Whole)—Raghavanka.
2. Gada Parva (Kumara Vyasa) Sandhis 1 to 5 (both inclusive) —275 stanzas.
3. Sakuntala (Basappa Sastry).

(iii) *Grammar, Prosody and Poetics.*—

1. Sabdamanidarpana (Basel Mission Press).
2. Chhandombudhi (Nagavarma)—Sri Vatsa Press, Royapettah, Madras.

   Kavyavalokana (omitting Sabdasmriti).
4. Kannada Kaipidi (Mysore University Publication).
5. Karnataka Kavi Charite—3 Vols.—R. Narasimhachar.

VIDVAN (*b*).

Preliminary.

(i) *Prescribed Text-books I.*—

1. Gadayuddha by Ranna (Whole).
2. Kabbigara Kava by Andayya (Whole).
3. Adbuta Ramayana by Nandalike Lakshminaranappa.
4. Jagannatha Vijaya—Rudrabhatta—Aswasa 4 only.

(ii) *Prescribed Text-books II.*—

1. Harischandra Kavya Sangraha.
2. Vacana Sastra Rahasya—Part I—(pp. 1—221 only).
3. Sakuntala Nataka (Basappa Sastri).
4. Ascarya Chudamani (M. Ramakrishna Bhat, St. Joseph's College, Bangalore).

(iii) *Composition.*—

(iv) *Grammar.*—

1. Sabda Smriti (Nagavarma).
2. Karnataka Bhasha Bhushanam (Nagavarma).

(v) *Prosody and Poetics.*—

1. Kannada Kaipidi (Mysore University Publication).
2. Kavyavalokana (omitting Sabdasmriti).

Final.

(i) *Prescribed Text-Books I.*—

1. Pampa Bharata, Aswasas 1—4 (both inclusive).
2. Lilavathi (Nemichandra) Aswasas 3 to 6 (both inclusive).
3. Ramaswamedha (Whole).
4. Pancatantra (Durga Simha) Tantra I (pp. 1—182).
5. Girija Kalyana (Harihara), Aswasas 9 and 10 (Lingayat Education Society, Dharwar.)

(ii) *Prescribed Text-Books II.*—

1. Virata Parva (Kumara Vyasa) Uttara Gograhana.
2. Bharatesa Vaibhava—Part I, Asthana Sandhi and Kavikavya Sandhi, 240 stanzas.
3. Mitra Vinda Govinda Nataka.
4. Kannada Nadina Charitre (Kannada Sahitya Parishat, Bangalore).

(iii) *History of Language and Literature.*—

1. Kavi Charite, 3 Vols.—R. Narasimhachar.
2. Kelavu Kannada Kavigala Kala Vicara, Venkatasubbiah.
3. Kannada Kaipidi (Mysore University).
4. Muddana (Central College, Bangalore).
5. Abhinava Pampa (Karnataka Sangha, Dharwar).
6. Kannada Nudiya Jeevala (Joshi).
7. Parthi Subba (Thimmappayya).

(iv) *Grammar.*—

1. Sabdamanidarpana (Kesiraja).
2. Sabdanusasana (Bhattakalanka) (For reference only).

(v) *Prosody and Poetics.*—

1. Kavirajamarga.
2. Chhandombudhi (Nagavarma).
3. Apratima Vira Charite (Tirumalarya).
4. Rasaratnakara (Salva).
5. Kavisamaya (Ramanujaiyengar).

VIDVAN (*d*).

Preliminary.

Papers (i) to (v). The same as for Vidvan (*b*)—Preliminary.

(vi) *History of South India.*—

1. Vijayanagara Samrajya (Desai Panduranga Rao).
2. Karnataka Gata Vaibhava (Alur Venkata Rao).
3. Historical Portions from Nadoja Pampa (Thimmappayya).
4. Kannada Nadina Charitre (Kannada Sahitya Parishat, Bangalore).

Final.

Papers (i) to (v). The same as for Vidvan (*b*)—Final.

vi) *Inscriptions.*—

Sasana Padya Manjari (R. Narasimhachar) and inscriptions 1 to 65 (pp. 631 to 637, Appendix IV, University Calendar, Vol. II, 1948—49).

MALAYALAM.

VIDVAN (*a*).

Preliminary.

Prescribed Text-books in the Selected Language.

PAPER I.

1. Kannassa Ramayanam—Kishkindha Kandam (University Selections for B.A., Vol. I, Part II).
2. Bharatam—Viratam and Drona Parvams—(Any press).

PAPER II.

1. Kalakeyavadham— Attakkatha by Kottayathu Thampuran. Edited by P. Krishnan Nair, Accoth House, Chittoor, Cochin State.
2. Chitrayogam—4 to 6 Cantos—Vallathole, Cheruthuruthi, Cochin State.

Drama.—

1. Uttararamacaritam by C. Chattukutti Mannadiyar—Mangalodayam Press, Trichur.
2. Othello by M. R. Nayar, c/o Mathrubhumi, Calicut.

Prose.—

Visvadarsanam by G. Visvanatha Sarma, Union Press, Tripunithura.

Final.

Grammar.—

1. Leelatilakam by Attur Krishna Pisharoti, Poothole, Trichur.
2. Kerala Paniniyam by A. R. Raja Raja Varma, B. V. Book Depot. Trivandrum.

Prosody and Poetics.—

1. Sahityadarpanam, Part I—Malayalam Improvement Committee, Mangalodayam Press, Trichur.
2. Kavyajeevitha Vritti, Part II—P. Krishnan Nair—Madras University Publication.
3. Vrittamanjari by A. R. Raja Rajà Varma—Kamalalaya Press, Trivandrum.

VIDVAN (*b*).

Preliminary.

Prescribed Text-books I.

Poetry.—

1. Ramacaritam—1 to 4 Patalams (both inclusive).
2. Kannassa Ramayanam—Kishkindha Khandam, Vol. I, Part II, Madras University Selections.
3. Krishna Gatha—Rukmineeswayamvaram by Cherusseri, (Any Press).
4. Unnineelee Sandesam—Edited by Attoor Krishna Pisharoti, Poothole, Trichur.
5. Bhasha Naishada Champu—Part I by P. Padmanabha Menon, B.A., B.L., Ernakulam.

Prescribed Text-books II.

Modern Prose.—

1. Cheraman Perumal by K. Krishna Menon, Mathrubhumi, Calicut.
2. Poy Poya Lokam by S. Narayana Pillai, B.A., B.L., S. R. V. Press, Quilon.

Prose:—

Uttraramacharitam (Gadyam) II Parts—Mangalodayam Press, Trichur.

Poetry.—

1. Bharatam—Bheeshma Parvam—Ezuttaccan—Any Press.
2. Parvathi Panigrahanam—Government Press, Trivandrum,
3. Nalacaritam, Kathakali I and II days plays (by Unnayi Varier) —B. V. Book Depot, Trivandrum.
4. Pushpavrishti by Vennikkulam Gopala Kurup, Mangalodayam Press, Trichur.
5. Bhasha Naishadam—I and II Sargams by P. S. Purushottaman Namboodiri.
6. Kavyopaharam by Kuttippurath Kesavan Nayar, Mangalam, Tirur.

Drama.—

1. Othello by M. R. Nayar, Mathrubhumi, Calicut.
2. Pratima Natakam by Kuttippurath Kesavan Nayar, Mangalam, Tirur.

Grammar.—

1. Kerala Paniniyam—Peetika—A. R. Raja Raja Varma, B. V. Book Depot, Trivandrum.
2. Leelatilakam—Edited by Sooranad P. N. Kunjan Pillai, Superintendent, Central Records Office, Trivandram.

Prosody and Poetics.—

1. Bhasha Darpanam by Attoor, Poothole, Trichur.
2. Bhasha Bhushanam, B. V. Book Depot, Trivandrum.
3. Kavyajeevitha Vritti, Part I, P. Krishnan Nayar, Madras University Publication.

Final.

Prescribed Text-books I.—

1. Ramacaritam—1 to 6 Patalams, University Selections.
2. Unnineelisandesam—Edited by Attoor, Poothole, Trichur.
3. Krishna Gatha—Poothana Moksham and Vatsastheyam (Cherusseri).
4. Thenkailasanathodayam Campu—Mangalodayam Press, Trichur.
5. Kalakeya Vadham—Attakatha—Edited by P. Krishnan Nayar.

Prescribed Text-books II.—

1. Kesaveeyam. 9, 10, 11 Sargams, Reddiyar Press, Quilon.
2. Karna Bhooshanam by Ulloor, Jagati, Trivandrum.
3. Amma by Balamani Amma, Vanneri Book Depot, Punnayurkulam, South Malabar.

Drama.—

1. Amba by Ulloor, R. T. Pillai and Sons, Chalai, Trivandrum.
2. Sakuntalam by Vallathole, Cheruthuruthi, Cochin State.

Grammar.—

1. Kerala Paniniyam by A. R. Raja Raja Varma.
2. Prayoga Deepika by P. K. Narayana Pillai, S. R. V. Press, Quilon.

Prosody and Poetics.—

1. Sahitya Darpanam—Part I—Mangalodayam Press, Trichur.
2. Kavyajeevitha Vritti, Part II—P. Krishnan Nayar, Madras University Publication.
3. Vritta Manjari, A. R. Raja Raja Varma.
4. Bhasha Bhushanam by A. R Raja Raja Varma.
5. Nataka Pravesika by A. D. Harisarma, Chittoor Road, Ernakulam.

History of Literature.—

1. Sahitya Charitam—Attur Krishna Pisharoti, Poothole Pisharam, Trichur.
2. Kerala Bhasha Sahitya Caritam—R. N. Panikkar, Parts I—III, V. V. Book Depot, Trivandrum.
3. Khanda Kathaprasthanam—M. P. Paul, Kottayam.
4. Tunchath Ezuttacchan—P. K. Narayana Pillai. S. R. V. Press, Quilon.
5. Attakkatha—P. Krishnan Nair, University Publication.

VIDVAN (*d*)

Tha same as for 1950.

Titles in Arabic, Persian and Urdu.

(Will be prescribed later).

Malpan and Soppar Titles Examinations.

The same as for 1950.

ORIENTAL TITLES EXAMINATIONS, 1952.

SANSKRIT.

The same as for 1951.

MARATHI.

The same as for 1951.

HINDI.

The same as for 1951.

TAMIL.

The same as for 1951.

TELUGU.

VIDVAN (*a*).

Preliminary.

Poetry.—

1. Bharatam, Aranyaparvam—Ramopakhyanam.
2. Harischandranalopakhyanam—Canto 2.
3. Maguvamanchala by Yetukuri Vankatanarasiah, Telugu Pandit, Guntur District Board.

Prose.—

History of the Vijayanagara Andhra Literature, Part I, by Tekumalla Atchyuta Rao.

Drama.—

1. Malatimadhavam by Janamanchi Venkataramaniah.
2. Purnima by Panuganti Lakshminarasimham.

[*N. B.*—The first paper on Texts will be on Poetry and the Second on Prose and Drama.]

Grammar.—

1. Balavyakaranam.
2. Proudavyakaranam.

[*N. B.* Questions on Grammar will appear in both the text papers but will only be in relation to the texts studied.]

Final.

Poetry.—

1. Sringaranaishadam—Canto 4.
2. Amuktamalyada—Cantos 1 and 2.
3. Brindavanam by Venkataparvateeswara Kavulu.

Drama.—

Mrichchakatika by Tirupati Venkata Kavulu.

Prose.—

Vyasamanjari—by C. R. Reddi.

Grammar, Prosody and Poetics:

1. Chintamanivishayaparisodanam, Chapter 3 by V. Ch. Sitaramaswami Sastri.
2. Appakaviyam—Canto 3.
3. Sahitya Darpanam—Chapter 3. Tr. by Vedam Venkataraya Sastri.

[*Note*:—The first paper on Texts will be on Poetry and the second on Drama and Prose. No direct questions on Grammar, Prosody and Poetics will be asked in the text papers.]

VIDVAN (*b*).

Preliminary.

Poetry.—

1. Bharatam—Sabhaparvam, Canto 2.
2. Kumarasambhavam—Cantos 1 and 2.
3. Uttaraharivamsam—Cantos 3 and 4.
4. Panditaradhya Charitra—Parvata Prakaranam.
5. Yayati Charitra—Cantos 1 and 2.
6. Trinakankanam by Rayaprolu Subba Rao.

Prose—

Saraswatavyasamulu by K. Ramakrishnayya.

Drama.—

1. Uttararamacharitra by Malladi Suryanarayana Sastri.
2. Sriramapattabhishekam by Patalabhedi Subrahmanyam.

Grammar, Prosody and Poetics.—

1. Balavyakaranam.
2. Proudavyakaranam.
3. Sahityadarpanam—Cento 3. Tr. by V. Venkataraya Sastri.

4. Kavyalankarachudamani—Cantos 3 and 5.
5. Andhra Chandralokam—Adidam Surakavi.

[*N. B.*—The first paper on Texts will be on Poetry and the second on Prose and Drama.]

Final.

Poetry.—

1. Bharatam—Souptikaparvam (whole).
2. Kasikhandam—Cantos 1 and 2 with "Avatarika."
3. Harischandra Nalopakhyanam—Canto 2.
4. Prabhavatipradyumnam—(whole).
5. Buddhacharitra—(whole) by Tirupati Venkata Kavulu.

Prose.—

1. Kavitwatatwavicharam by C. R. Reddi.
2. Sahityasamalochanam by P. T. Hanumantha Rao.

Drama

1. Sakuntalam by K. Kanakamma.
2. Kundamala by Getti Lakshminarasimha Sastri, P. R. R. & Sons, Bezwada.

Grammar.—

1. Narayaniyam by Charla Narayana Sastri.
2. Andhrabhashanusasanam by Malladi Suryanarayana Sastri.
3. Tatsamachandrika—(Chapters on Sandhi and Samasa) by Sannidhanam Suryanarayana Sastri.

Prosody and Poetics.—

1. Appakaviyam—Canto 3.
2. Dasarupakam—Cantos 3 and 4 by Malladi Suryanarayana Sastri.
3. Kuvalayanandasaram by Bulusu Venkataramana Sastri.

History of Language and Literature.—

1. Andhra Vangmaya Charitra Sangraham by Kavitwavedi.
2. Bhashotpattikramam by K. Ramakrishnayya.
3. Andhra Bhasha Vikasamu by G. J. Somayaji.
4. Sandhi (M. U. Publication).

(*N.B.*—The first paper on Texts will be on Poetry, and the second on Prose and Drama).

VIDVAN (*d*).

Preliminary.

Poetry, Prose and Drama.—

The same as for Vidvan (*b*) Preliminary.

Grammar I.—

1. Balavyakaranam.
2. Proudavyakaranam.

Grammar II.—

1. Narayaniyam by Charla Narayana Sastri.
2. Chintamanivishayaparisodanam.

History of South India.—

Andhrula Charitra by C. Veerabhadra Rao.

[*N. B.*—The two Text papers, the paper on Composition and the first paper on Grammar will be common with Vidvan (b) Preliminary.]

Final.

Prose, Poetry and Drama.—

The same as for Vidvan (*b*) Final.

Advanced Grammar, Prosody and Poetics I.—

1. Appakaviyam—Canto 3.
2. Dasarupakam—Cantos 3 and 4. Tr. by Malladi Suryanarayana Sastri.
3. Kuvalayananda Saram, Tr. by Bulusu Venkataramana Sastri.

Advanced Grammar, Prosody and Poetics II.—

1. Tatsama Chandrika (Chaps. on Sandhi and Samasa only) by S. Suryanarayana Sastri.
2. Chintamani Vishayaparisodanam by V. Ch. Sitaramaswami Sastri.
3. Sahitya Darpanam. Tr. by V. Venkataraya Sastri. (Chaps. 8, 9 and 10 only).

History of Language and Literature.—

The same as for Vidvan (*b*) Final.

Inscriptions.—

Sasanapadyamanjari. Ed. by Jayanti Ramayya Pantulu.

[*N. B.*—The two papers on Texts, the I paper on Advanced Grammar, Prosody and Poetics and the paper on History of Language and Literature are common with Vidvan (*b*) Final.]

KANNADA.

VIDVAN (*a*) and (*b*).

The same as for 1951, with the following change under Vidvan (*b*) *Final.*—

Under prescribed Text-books II, instead of Kumara Vyasa, *insert* Thimmanna Kavi's Vainathopakhyanam.

MALAYALAM.

The same as for 1951.

Titles in Arabic, Persian, Urdu, Hebrew and Syriac.

(Will be prescribed later).

APPENDIX IX.

B. O. L. DEGREE EXAMINATION.

PART I.

ENGLISH.

The same as for the B.A. (Hons.) Preliminary Examination.

PART II-A.

GENERAL INDIAN HISTORY.

The same as for Group (iv-a), B.A. Degree Examination.

PART II-B.

(i) Group I—Sanskrit.

The same as for the Final Division of the Siromani Title Examination.

(ii) Group II—

(a) Sanskrit and one of the following Languages :—Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya, Hindi.

(b) One of the following Languages as the Main Language, with Sanskrit as the Subsidiary Language :—Tamil, Telugu, Kannada, Malayalam, Marathi, Oriya, Hindi.

(c) * * * *

(d) One of the following Languages :—Tamil, Telugu, Kannada, Malayalam.

The same as for the Final Division of the Vidvan Title Examination under (a), (b) and (d), respectively.

(iii) Group III—

(a) Arabic.

(b) Persian and Urdu.

(c) Urdu and Persian, Tamil or Malayalam.

(d) Tibb-i-Unani in Persian and Urdu.

(e) Tibb-i-Unani in Arabic and Urdu.

The same as for the Final Division of the Afzal-ul-Ulama, Munshi-i-Fazil, Adib-i-Fazil, Tabib-i-Kamil, and Afzal-ul-Atibba Titles Examinations, respectively.

(iv) Group IV—

(a) Syriac, or

(b) Syriac as the main language and Hebrew as the subsidiary language.

The same as for the Final Division of the Malpan and Soppar Titles Examinations, respectively.

APPENDIX X.

B.O.L. (Honours) DEGREE EXAMINATION.

Text-books.

PART I—ENGLISH.

The same as for the B. A. (Hons.) Preliminary Examination.

PART II.

1949.

BRANCH I—SANSKRIT.

(Will be prescribed later).

BRANCH II.

TAMIL.

I. Text-Books.

1. *Sangam Works—*

For detailed study.—

Poems of Kapilar and Auvvaiyar (as given in Sanga Ilakkiyam, Samajam edition).

For general study.—

Ettuthogai and Pathupattu.

2. *Kilkkanakku.—*

For detailed study.—

Kural—Porutpal.

For general study.—

Patinen Kilkkanakku.

3. *Hymnal Literature.—*

For detailed study.—

Agasthiyar Tevarattiratu.

For general study.—

Appar and Periyalvar.

4. *Early Kavyas.—*

For detailed study.—

Chintamani : Kantharuva Tatthaiyar Ilambakam.
Manimekalai : Cantos 1—10.

II. Text-Books.

1. *Later Kavyas.*—

For detailed study.—

Kamban—Sundarakandam (Kadal-tavu palalam to the end of Chulamanippadalam).

Periapuranam—Taduttalkondapuranam.

Sirapuranam—Nabiavatarappadalam.

Tempavani—Tirumanappadalam.

For general study.—

Epic Literature.

2. *Prabhandas.*—

For detailed study.—

Mukkudalpattu.

Kurralakkuravanji.

For general study.—

Types of the Prabhandas Ula, Parani, Kovai and Kalambakam.

3. *Drama.*—

For detailed study.—

Manonmaniyam.

III. Grammar.

Tolkappiyam.—

Eluthadikaram—Ilampuranam.

Solladikaram—Senavarayam.

Poruladikaram—Naccinarkkiniyar and Perasiriyam.

IV. History of Literature and Literary Criticism.

LITERARY CRITICISM AS APPLIED TO TAMIL LITERATURE.

Syllabus.

1. Fundamentals of Poetics—Fine Arts in their fundamental affinity with one another.

Theory of Art.

Poetics in relation to Aesthetics. Scope of Poetics.

Rhetoric and Figures of Speech and Style.

Meyppattu or Rasa as subjective reality.

Definition of Poetry and its place in fine arts. Theory of Poetry.

Function of Poetry in human activity.

Didacticism in Poetry.

Poetry and Science.

Poetry and Prose.

Form and content.

Poetic Diction—Meter—Equipment of the Poet—Imagination, Intuition; Sense of Beauty—Culture.

Literature—its definition.—Theory of Literature—Study various kinds of literature. Standard of Literary Tastes.

Theory of Criticism. Literary Criticism—Literary merits and blemishes. Various Types of criticism. Criticism as an art and as an impetus to creation.

(The following books are not prescribed as text-books but are recommended for explaining the scope of study. Familiarity with the principles alone is expected and not a detailed study. Candidates are expected to apply the principles to their study of Tamil Literature).

Richards: Literary Criticism.

Lamborn: Rudiments of Criticism.

Abercrombie: Literary Criticism.

Galey and Scott: An Introduction to the methods and materials of Literary Criticism.

Moulton—Modern Study of Literature.

Courthope: Life in Poetry and Law in Taste.

Hudson: Introduction to Study of Literature.

Saintsbury: History of Criticism (Intermediate Chapters only).

S. K. De: History of Sanskrit Poetics.

2. History of Tamil Criticism—General.

3. Various kinds of Literature in Tamil and History.

Poetry and Prose (Tolkappiam Ceyyul Iyal).

Development of Prose.

Various Prabandams.

Didactic Poetry (Kil Kanakku).

Epic and Puranams.

Akam and Puram—The significance of this classification.

Lyric Poetry—Akam.

Dramatic Poetry.

Development of Drama and Novel and Short Story.

Biography.

Development of Music in relation to Literature (Varippattu, Tevaram, etc.).

Satire (Angatam—Poems of Kalamegam).

Elegy (Kaiyaru Nilai).

Learned Poetry and Folksongs (as illustrated by Adanganmurai and Paduthurai respectively of Tattuvarayar).

Religious Poetry.

Patriotic Poetry.

Seettu Kavi.

4. Figures of Speech and Meyppattu.

Meyppattiyal, Uvamai Iyal, Enumeration of the figures in the various Nigandu, in Dandi Alankaram, Vira Soliyam, (Alankarappatalam).

Ilakkanavilakkam (Ani-Iyal).

Tonnul (Ani-Iyal).

Maran Alankaram.

Visakapperumal Aiyar's Ani Ilakkanam.

Dvani—Kurippupporul—Ullurai Iraicci.

Style and Rhetoric.

Meter and Subject-matter (Seyyul Iyal).

(Knowledge accurate so far as it goes but neither extensive nor minutely detailed is expected).

Chengalvaraya Pillai's Tamil Prose.

Tolkappiyam Seyyul Iyal, Uvamai Iyal, Meyppattu Iyal.

Kavyas—Jagannatha Iyer.

Pattiyals.

Text-Books.

For Study.—

K. S. Srinivasa Pillai: Tamil Varalaru—Parts I and II.

Dr. V. Swaminatha Ayyar: Sanga-kala-t-tamilum pirkala-t-tamilum.

G. Duraiswami Pillai: Tamil Ilakkiyam, Sanga-kalam.

V. R. Ramachandra Dikshitar: Studies in Tamil Literature and History.

Lascelles Abercrombie: Literary Criticism.

I. A. Richards: Literary Criticism.

C. T. Winchester: Some Principles of Literary Criticism.

For Consultation.—

A. Kumaraswami Pillai: Tamil Pulavar Charitram.

M. S. Purnalingam Pillai: History of Tamil Literature.

M. Srinivasa Ayyangar: Tamil Studies.

Worsfold: Principles of Criticism.
Hudson: Introduction to the Study of Literature.
Gurrey: The Appreciation of Poetry.
Lamborn: The Rudiments of Criticism.
Moulton: The Modern Study of Literature.

V. History of Language and Philology.

For Study.—

Caldwell: A Comparative Grammar of the Dravidian Languages.
Dravidic Studies, Nos. 1—4: Madras University publications, (The Superintendent, Government Press, Madras).

Chatterji, S. K.: The Origin and Development of the Bengali Language, Volume I, Introduction, Sections 1-40, 4 and Appendix B.

Jesperson: Language, Its Origin, Theory and Development.
Gune: Introduction to Comparative Philology.
Vendryes: Language, A Linguistic Introduction to History.

For Consultation.—

Grierson: Linguistic Survey: Vol. IV, Dravidian Languages.
Sweet: The History of Language (Temple Primer).
Bloomfield: Introduction to Study of Language.
Slater: Dravidian Elements in Indian Culture.
Bagchi, P. C.: Pre-Aryan and Pre-Dravidian in India.

VI. Cognate Language, etc.

Cognate language.—

Same text-books as for Intermediate, Part II.

or

Special Period: 16th Century Literature.

or

Special Branch: Pre-Kamban Epics.

VII. The History of India.

The same as for Branch III—History—of the B.A. (Honours) Degree Examination.

VIII. South Indian History and Inscriptions.

SOUTH INDIAN HISTORY

1. The earliest inhabitants of India south of the Vindhyas—evidence of archaeology and early Tamil literature on their culture. Aryanisation—evidence of Sanskrit epics; legends of Agastya and Parasurama.

2. Beginning of the historical period—Sources of history—South India in the age of the Mauryas—The Satavahanas and their successors—Buddhism—Amaravati and its influence.

3. Sangam age in the Tamil country—The three kingdoms and minor chieftains—Polity—Society—Religious and economic conditions—Foreign trade and maritime activity and colonization in the east.

4. Political condition in the seventh century—Chalukyas of Badami and Vengi—Kadambas—Gangas—Pallavas of the Simhavishnu line—Pandyas. Their mutual relations—Religious conditions. Testimony of Hiuen Tsang — Bhakti movements — Saivism and Vaishnavism — Buddhism and Jainism—Colonial expansion continued—Administration and society—Literature, Arts and Architecture. Ajanta, Mahabalipuram, Kanchipuram.

5. The Rashtrakutas—their rise, progress and fall—The Chalukyas of Kalyani—Vengi and its relations with Rashtrakutas and Chalukyas—The Cholas, their rise and progress. The union of Chola and Vengi kingdoms under Kulottunga I—Further history of the Chola empire—The Telugu Chodas and Hoysalas—The resurrection of the Pandyas—The rise of the Kakatiyas—Fall of the Chola empire. Chola administrative system. The role of the semi-autonomous village community in the period. Trade organization and guilds. The art and architecture of the period—Badami, Ellora, Tanjore, Gangaikondacholapuram, Tribhuvanam, Halebid, Somanathpur.

6. The advent of Islam into South India—The role of Vijayanagar—Outline of Vijayanagar history—Its relations to Muslim States, the Portuguese and the English. Foreign travellers who visited Vijayanagar. Fall of the empire—Administration—Art—Hampi—Literature.

Books recommended.—

R. Satyanathan : College text-book of Indian History, Vol. I.

P. T. Srinivasa Ayyangar : History of the Tamils.

K. A. N. Sastri : The Pandyan Kingdom.

Do. The Cholas.

Dr. C. Minakshi : Society and Administration under the Pallavas.

Bhandarkar : Early History of the Dekhan.

Smith : Oxford History for Vijayanagar.

Smith : A History of Fine Art in India and Ceylon (Second Edition), Chapters VII, VIII, Parts I and X.

INSCRIPTIONS.

Pallavas—Nos. 1 and 2 Pandyan—Nos. I and III. Chola—Nos. I. II, V, VI, VII, IX, XII, XIV, XVI, and XVII. (*Vide* Inscription, prescribed for Branch XI of the B.A. (Honours) Degree Examination)

EXAMINATION IN TELUGU AND KANNADA, 1949

TELUGU.

I and II : Prescribed Texts I & II—Same as Old Poetry, Modern Poetry, Drama and Prose for B.A. (Hons.), Branch XI.

N.B.—The I Paper will be on Poetry (Old and Modern) and the II Paper will be on Drama and Prose.

III : (*a*) Related Language—Sanskrit—Texts to be prescribed by the Sanskrit Board.

or

(*b*) Special Period or Special Branch—Age of Kavitrayam (1000 A.D.—1350 A.D.)

IV : History of Language and Philology—Same as for B.A. (Hons.): 1949, Branch XI.

V : Grammar Prosody and Poetics—Same as for B. A. (Hons.), 1949, Branch XI.

VI : History of Language and Literary Criticism—Same as for B.A. (Hons.), 1949, Branch XI.

VII : Inscriptions and South Indian History—Same as for B.A. (Hons.), 1949, Branch XI.

VIII : *The History of India*—Common to all B.O.L. (Honours) Examinations.

N.B.—Excepting the two papers on texts and the paper on General Indian History, all other papers will be common with the B.A. (Hons.) Branch XI papers.

KANNADA.

I. *Poetry.*—

Pampa Ramayanam (1—4 Aswasas).

Gadayuddha by Ranna.

Neminatha Purana (Madras University Publication) Aswasas 1—3.

Pushpadanta Purana (Madras University Publication) Aswasas 1 and 2.

Jagannatha Vijaya by Rudrabhatta, Aswasas 1-4.

Sri Rama Pattabhisheka by Mahalakshmi.

Harischandra Kavya Sangraha (Mysore University Publication).

Selections from Kannada Bavuta (Sahitya Parishat, Bangalore).

II. *Prose and Drama.*—

Cikkadevaraya Vamsavali.

Gopala Krishna Gokhale by Gundappa.

Akka Tangi by Narayana Sangama.

Bettada Jeeva by K. S. Karanth.

Dramatic Literature in Kannada with a critical and intensive study of the following dramas :—

Mitravinda Govinda.

Sakuntala by Basappa Sastri.

Mricchakatika.

Bhasha's One Act Plays by L. Gundappa.

III. *Special Period* :—

Jaina Period with an intensive and critical study of Pampa's works: Bharata and Adi Purana; or Special Branch of Literature: Haridasa Literature with an intensive and critical study of the following Dasas: (1) Purandara, (2) Kanaka, (3) Jagannatha.

IV. *History of Language and Philology.*—

For Study.—

1. History of Kannada Language by R. N. Achar.
2. The History of Language by Sweet.
3. Language, a Linguistic Introduction to History by Vendrys.
4. Comparative Grammar of the Dravidian Languages by Caldwell.
5. Dravidic Studies I-IV (Madras University Publication).
6. Dravidian Philology by Dr. C. Narayana Rao.
7. Studies in Dravidian Philology by K. Ramakrishnayya (Madras University Publication).
8. Kannada Nudiya Huttu by Joshi.

For Consultation.—

1. Language, its origin, theory and development by Jesperson.
2. Introduction to study of a language by Bloomfield.
3. Dravidian India, Vol. I, by Sesha Ayyangar.
4. Introduction to Comparative Philology by Gune.

V. *Grammar.*—

Sabdamanidarpana and Sabda Smriti up to and including Nama Prakarana.

VI. *Grammar.*—

Same texts: Remaining portions.

VII. *History of Literature and Literary Criticism.*—

1. History of Kannada Literature by R. Narasimhachar.
2. Karnataka Kavi Charite, 3 Vols. by R. Narasimhachar.
3. Kelavu Kannada Kavigala Kala Vicara by Dr. Venkatasubbiah.
4. Abhinava Pampa (Karnataka Sangha, Dharwar).
5. Ranna Kavi Prasasti.
6. Sahitya Mattu Vimarshe by D. R. Bendre.
7. Vimarshe by Masti.
8. History of Kannada Literature—Christian Heritage Series by Rice.

MALAYALAM.

Prescribed texts (A).—

Same as for Vidvan (d) Final with the following additions:—

Krishnagatha—up to the end of Kamsasadgathi (Any Press).

Unnuneelisandesam, edited by Attur Krishna Pisharoti (B. V. Book Depot, Trivandrum).

Prescribed texts (B).—

Same as for Vidvan (d) Final with the following additions:

Drama.—

Uttara Rama Caritam by Chathukutty Mannadiar (Mangalodayam Press, Trichur).

Nalacaritam Tullal—Kuncan Nambiar (Any Press).

Cognate Language or a Special Period or a Special Branch of Literature.

Cognate Language.—

1. Mahabharatam—Ezuttaccan—Karna Parvam (Any Press).
2. Kalyanasaugandhikam (Tullal)—Kuncan Nambiar (Any Press).
3. Kucelavrttam—Vanci Pattu—Ramapurath Varier (Any Press).
4. Koccuseita by Vallathols, Ceruthuruthi, Cochin State.

Drama.—

Subhadrarjunam by T. Ikkavu Amma (T. K. Krishna Menon, Ernakulam).

Prose.—

Virutan Sanku by K. Achyuta Menon (Mangalodayam & Co., Trichur).

Special Branch—Kathakali Literature or Tullal Literature in Malayalam.

Kathakali Literature—Representative selections from the compilation published by S.R.V. Press, Quilon.

Books for consultation.—

Attakkatha or Kathakali by P. Krishnan Nayar (Madras University Publication).

Kathakali by I. Raman Menon (V. Sundara Ayyar & Sons, Trichur.)

Sahityacaritram, Part III, by R. Narayana Panikkar, B.A., L.T.

Special Period.—

Ezuttaccan and his Age.

History of Language and Philology.—

Same as for Honours—Branch XI.

Grammar (A).—

Same as for Vidvan (d) Final with the following additions :—

Lilatilakam, edited by Attur Krishna Pisharoti (B. V. Book Depot, Trivandrum).

Sahityasahyam by A. R. Raja Raja Varma (Kamalalaya Press, Trivandrum).

Grammar (B).—

Same as for Vidvan (d) with the following additions :

Bhasha Bhushanam by A. R. Raja Raja Varma.

Vrtta Manjari by A. R. Raja Raja Varma.

History of Literature and Literary Criticism.—

Same as for Honours Branch XI with the addition of Kali Worship in Kerala, Part I, by Dr. C. Achyuta Menon, (Madras University Publication), and Bhasha Sahitya Charitram, Vols. I to IV, by R. Narayana Panikker, (P. Govinda Pillai, V. V. Book Depot, Chalai, Trivandrum).

Inscriptions.—

1. Selections of Inscriptions published by the University from time to time.
2. Malabar and the Dutch by K. M. Panikkar (Tharaporavala & Sons, Bombay).

SANSKRIT AS A RELATED LANGUAGE.

Kumarasambhava, Cantos 1, 2 and 3.

Magha's Sisupalavadha, Cantos 1 and 2.

Uttararamacharita of Bhavabhuti (whole).

Bana's Kadambari, from the beginning to the end of Sukanasopadesa.

BRANCH III.

ARABIC, PERSIAN OR URDU.

(Will be prescribed later)

TEXT-BOOKS FOR 1950.

PART II.

BRANCH II—*Sanskrit as a Related Language.*

The same as for 1949.

TAMIL.

The same as for 1949.

TELUGU.

The same as for 1949.

KANNADA.

I. *Prescribed Text-Books I.*—

1. Gadayuddha (Ranna)—(Whole).
2. Ramachandra Charita Purana (Nagachandra)—Aswasas 1 to 4.
3. Pushpadanta Purana—Aswasas 1 and 2.
4. Srirama Pattabhisheka—Mahalakshmi.
5. Harischandra Kavya (Raghavanka).

II. *Prescribed Text-Books II.*—

1. Ramaswamedha Chapters 1 to 5.
2. Chikadevaraya Vamsavali (Tirumalarya).
3. Gopalakrishna Gokhale (D. V. Gundappa).
4. Bettada Jeeva (Kararith).
5. Honniyah Maduvo (Shankar Bhat).
6. Mitravinda Govinda (Singararya).
7. Sakuntala (Basappa Sastri).
8. Mricchakatika.

III. *Special Period.*—

Pre-Chalukya Period: Chalukya Period: Rashtrakuta Period: Hoysala Period: Vijayanagara Period: Mysore Period: Modern Period.

Special Branch.—

Jaina Literature; Veerasaiva Literature; Brahmin Literature. Any one of the above divisions may be selected by the candidate.

IV. *History of Language and Philology—For Study.*—

1. History of Kannada Language—R. Narasimhachar.
2. Comparative Grammar of the Dravidian Languages—Caldwell.
3. Studies in Dravidian Philology—K. Ramakrishnayya.
4. Dravidian Philology—Dr. C. Narayana Rao.
5. Kannada Nudina Huttu—Joshi.
6. History of Language—Sweet.
7. Language, a Linguistic Introduction to History—(Vendryes).

For Consultation.—

1. Language, its origin, theory and development by Jesperson.
2. Introduction to the Study of Language by Bloomfield.
3. Dravidian India by Sesha Ayyangar.
4. Introduction to Comparative Philology by Gune.

V. *Grammar.*—

1. Sabdamanidarpana by Kesiraja.
2. Sabdasmriti—Nagavarma.
3. Kannada Kaipidi, Mysore University Publication.

VI. *History of Literature and Literary Criticism.*—

1. History of Kannada Literature by R. Narasimhachar.
2. Karnataka Kavi Charite—3 vols. by R. Narasimhachar.
3. Kelavu Kannada Kavigala Kala Vicara by Venkatasubbiah.
4. Kannada Sahitya Vahini—(Minchinaballi Publication).
5. Kannada Samskriti.
6. Muddana—(Various authors).
7. Abhinava Pampa—(Various authors).
8. Ranna Kavi Prasasti (Various authors).
9. Vimarse—Masti.
10. History of Kannada Literature—Rice.

MALAYALAM.

The same as for 1949.

TEXT-BOOKS FOR 1951.

PART II

TAMIL.

I. *Text-books.—*

1. *Sangam Works:*

For Detailed Study.—

Poems of Kapilar and Avvaiyar (as given in Sanga Ilakkiyam, Samajam edition).

For General Study.—

Narrinai, Paripadal and Pattuppattu.

3. *Kilkanakku:*

For Detailed Study.—

Tirukkural—Arasiyal and Amaicciyal.

For General Study.—

Naladiyar.

3. *Early Kavyas:*

For Detailed Study.—

Silappadhikaram—Puhar Kandam.

Chintamani—Namakal Ilambakam and Kantaruva Tattaiyar Ilambakam.

Manimekalai—Katai—1 to 10.

II. *Text-Books.—*

1. *Later Kavyas:*

For Detailed Study.—

Kambaramayanam—Ayodhya Kandam (to the end of Nagarningu padalam).

Periyapuranam—Taduttatkonda Puranam.

Sirapuranam—Nabi Avatara padalam.

Irakshanya Yatrikam—Irakshanya Carita padalam.

For General Study.—

Mukkudal Pallu.

Kurrala-k-kuravanchi.

Nalvar Nanmani Malai.

III. *Grammar.—*

Eluttatikaram—Ilampuranam.

Solladikaram—Ilampuranam.

Porulatikaram—Ilampuranam.

IV. *History of Literature and Literary Criticism.—*

N.B.—The Text-Books mentioned at the end of Sections 1 and 4 of the syllabus may be omitted.

The following books are recommended for consultation :—

Richards: Literary Criticism.

Lamborn: Rudiments of Criticism.

Abercrombie : Literary Criticism.
Moulton : Modern Study of Literature.
Courthope : Life in Poetry and Law in Taste.
Hudson : Introduction to Study of Literature.
Saintsbury : History of Criticism (Intermediate chapters only).
Winchester : Some Principles of Literary Criticism.
Worsfold : Principles of Criticism.
Gurrey : The Appreciation of Poetry.
Swami Vipulananda : Matanga Cūlamani.
M. S. Purnalingam Pillai : History of Tamil Literature.
Dr. V. Swaminatha Ayyar : Sangā-t-tamilum Pirkala-t-tamilum.
K. S. Srinivasa Pillai : Tamil Varalaru, Parts I and II.
Chengalvaraya Pillai : Tamil Prose.
V. R. R. Dikshitar : Studies in Tamil Literature and History.
Dr. A. C. Chettiyar : Advanced Studies in Tamil Prosody (Chapters 7 to 12).

V. *History of Language and Philology.—*

For Study.—

Caldwell : A Comparative Grammar of Dravidian Languages.

Dravidic Studies : Nos. 1 to 4, Madras University Publications. (The Superintendent, Government Press, Madras.)

Chatterji, S. K. : The Origin and Development of the Bengali Language, Volume I, Introduction, Sections 1 to 40 and Appendix D.

Jesperson : Language, its Origin, Theory and Development.

Vendryes : Languages, A Linguistic Introduction to History.

V. G. Suryanarayana Sastri : Tamil Mozhi Varalaru.

Chelvakesavaraya Mudaliar : Essay on Tamil.

For Consultation.—

Grierson : Linguistic Survey, Volume IV, Dravidian Languages.

Sweet : The History of Language (Temple Primer).

Bloomfield : Introduction to the Study of Language.

VI. *Cognate Language.—*

The same Text-Books as for Intermediate Part II.

or

Special Period : 16th Century Literature.

or

Special Branch : Ethical Literature in Tamil.

TELUGU.

The same as for 1950.

KANNADA.

The same as for 1950.

MALAYALAM.

The same as for 1950.

TEXT-BOOKS FOR 1952.

PART II.

TAMIL.

The same as for 1951.

TELUGU.

PAPERS I & II.

Old Poetry, Modern Poetry, Drama and Prose :—The same as for B.A. (Hons.) Branch XI, 1952.

(*N.B.*—The I paper will be on Old and Modern Poetry and the II on Drama and Prose).

PAPER III.

(*a*) Related Language—Sanskrit : Texts to be prescribed by the Sanskrit Board :

or

(*b*) Special Period—Age of Srinatha.

PAPER IV.

History of Language and Philology : The same as for B.A. (Hons.) Branch XI, 1952.

PAPER V.

Grammar, Prosody and Poetics : The same as for B.A. (Hons.) Branch XI, 1952.

PAPER VI.

History of Literature and Literary Criticism : The same as for B.A. (Hons.) Branch XI, 1952.

PAPER VII.

Inscriptions and South Indian History : The same as for B.A. (Hons.) Branch XI, 1952.

PAPER VIII.

General Indian History : Common to all B.O.L. (Hons.) Examinations.

(*N.B.*—Excepting the two papers on Texts and the paper on General Indian History, all other papers will be common with the B.A. (Hons.) Branch XI Examination papers).

KANNADA.

The same as for 1951.

MALAYALAM.

(Will be prescribed later.)

APPENDIX XI.

SYLLABUSES FOR

SANGITA SIROMANI TITLE AND BACHELOR OF MUSIC DEGREE.

Sangita Siromani.

Preliminary.

THEORY.

Indian Music and its place amongst the musical systems of the world. The characteristic features of Indian Music.

Fundamental Technical Terms and their meaning. Detailed knowledge of the notation used in South Indian Music.

The Tala system: Shadhangas; the scheme of the 35 ta las; Desadi and Madhyadi talas; Chapu tala and its varieties.

The scheme of the 72 Melakartas. Katapayadi formula and its application.

Raga lakshana in general; the *trayodasa* lakshanas mentioned for ragas in the Sanskrit works on music.

Raga classification.

Lakshana of the following 36 Ragas :—

Todi	Kambhoji
Dhanyasi	Yadukulakambhoji
Mayamalavagaula	Kedaragaula
Saveri	Sahana
Bauli	Mohana
Nadanamakriya	Sama
Chakravaka	Khamas
Malayamaruta	Sankarabharana
Bhairavi	Bilahari
Anandabhairavi	Kedara
Ritigaula	Begada
Kharaharapriya	Hamsadhvani
Mukhari	Arabhi
Abhogi	Pantuvarali
Sriraga	Purvakalyani
Madhyamavati	Simhendramadhyama

Gaurimanohari	Kalyani
Harikambhoji	Saranga

Art Music and Folk Music.

Musical forms and their classification.

Lakshana of the following types of compositions :—

Gita, Svarajati, Jatisvara, Tana Varna, Pada Varna, Kirtana, Ragamalika, Pada, Javali and Tillana.

Musical instruments and their classification. Knowledge of the construction of the more important instruments like the Vina, Violin, Flute, Gotuvadya, Nagasvara and Mridanga.

HISTORY.

History and development of South Indian Music during the Modern Period with special reference to the contributions of the following composers, along with short biographies of them :—

Purandara Das	Gopalakrishna Bharati
Tallapakam Chinnayya	Kavi Kunjara Bharati
Narayana Tirtha	Anayya
Bhadrachala Ramadas	Ramaswamy Sivan
Kshetrajna	Veena Kuppayyar
Paidala Gurumurti Sastri	Karur Dakshinamurti Sastri
Tyagaraja	Patnam Subramanya Ayyar
Muthuswami Dikshitar	Mysore Sadasiva Rao
Syama Sastri	Tiruvottiyur Tyagayyar
Subbaraya Sastri	Singaracharlu
Svati Tirunal	Dharmapuri Subbarayar
Muvvalur Sabhapati Ayyar	Pattabhi Ramayya
Arunachala Kavirayar	

Prescribed Books.—

Ramamatya's *Svaramelakalanidhi*

Raghunatha's *Sangita Sudha.*

Venkatamakhi's *Chaturdandi Prakasika.*

Sangraha Chudamani.

Book for reference :—

Sangita Marthanda

PRACTICAL—MAIN.

For reference :—

Flute by P. Sambamurti (Second Edition).

35 Alankaras, 12 Sanchari Gitas, 2 Svarajatis, 2 Jatisvaras, 6 Adi Tala Varnas, 4 Ata Tala Varnas and 2 Jhampa Tala Varnas ; 36 Kirtanas

in the prescribed Ragas (*see* under Theory) 2 Padas, 2 Javalis and 2 Ragamalikas.

Tuning of the Tambura and the Vina. Alapana of the prescribed Ragas. Sight singing and Aural training.

Rendering of Kalpana svaras in the compositions in the following 16 Ragas :—

Todi, Dhanyasi, Mayamalavagaula, Saveri, Bhairavi, Anandabhairavi, Mukhari, Madhyamavati, Kambhoji, Mohana, Kedaragaula, Sankarabharana, Bilahari, Purvakalyani and Kalyani.

PRACTICAL—SUBSIDIARY.

Number of Compositions as specified in paragraph 1 of the Main syllabus (Practical); all the Compositions prescribed for the Main Examination; and the Alapana of the following ragas—Todi, Mayamalavagaula, Saveri, Bhairavi, Anandabhairavi, Madhyamavati, Kambhoji, Mohana, Sankarabharana, Bilahari, Purvakalyani and Kalyani.

Final.

THEORY.

Manodharma Sangita and its forms. Raga Alapana Paddhati. Pallavi singing and the Paddhati underlying it.

Raga classification in ancient music. The Grama—Murchana—Jati system and the Suddha—Chayalaga—Sankirna system.

The theory of 22 srutis and the discussions relating thereto. Gamakas and their varieties.

Tala dasa pranas. Marga talas and Desi talas.

Musical forms figuring in sacred music, opera and dance music.

Musical Prosody.

Lakshana of the following 36 Ragas :—

Asaveri	Darbar	Athana
Punnagavarali	Nayaki	Navaroj
Ahiri	Sriranjani	Kuranji
Gaula	Huseni	Suddha Saveri
Bhupala	Kanada	Kannada
Gaulipantu	Devamanohari	Nata
Saurashtra	Surati	Varali
Vasanta	Natakuranji	Ramapriya
Revagupti	Balahamsa	Shanmukhapriya
Hindola	Nilambari	Latangi
Kiravani	Devagandhari	Vachaspati
Manirangu	Purnachandrika	Hamirkalyani

Musical appreciation; styles of the great masters. Outlines of comparative music. Developments in contemporary music.

Acoustics.—

Musical sounds and their characteristics; Pitch, Intensity. Timbre; Harmonics, Beats, Interval, Sympathetic vibration.

The production and transmission of sound. Reflection of Sounds; Echoes, Resonance. The laws of transverse vibration of strings and air-columns.

Harmony and Melody. Absolute pitch and Relative pitch. Modal shift of tonic. Scales of Just Intonation and Equal Temperament.

The structure of the larynx and ear.

Acoustics of music halls. Gramophone and the Radio.

HISTORY.

History of Indian Music from ancient times with special reference to the works of the following:—

Bharata, Dattila, Matanga, Parsvadeva, Narada, Sarangadeva, Ahobala, Somanatha, Ramamatya, Raghunatha, Venkatamakhi, Tulajaji.

The origin and development of the Indian musical scale.

Evolution of musical forms. Sacred music in Sanskrit and Indian Languages and its growth. The origin and evolution of operas.

The influence of exotic music on the development of South Indian Music.

Study of the lives and the contributions of the following composers:—

Jayadeva
Sarangapani
Ghanam Sinayya
Sadasiva Brahmendra
Ramaswamy Dikshitar
Virabhadrayya
Matrubhutayya
Ghanam Krishnayyar
Adiyappiah
Pallavi Gopalayyar
Margadarsi Seshayyangar
Ponniah
Pallavi Duraisami Ayyar
Pallavi Seshayyar
Maha Vaidyanatha Ayyar
Subbarama Ayyar
Ramnad Srinivasa Ayyangar
Muthu Thandavar
Arunagirinathar
Papavinasa Mudaliar
Marimuthu Pillai
Vedanayakam Pillai

Books Prescribed :—

1. Music Chapters of Bharata's *Natya Sastra.*
2. Matanga's *Brhaddesi,*
3. The svara and raga Chapters of *Sangita Ratnakara.*
4. Ahobala's *Sangita Parijata.*
5. Tulajaji's *Sangita Saramrita.*

For Reference.—

"Flute" by P. Sambamurti (Second Edition).

Introduction to the Study of Musical Scales by Alain Danielou.

Sangita Martanda.

PRACTICAL—MAIN.

4 Raganga raga lakshana gitas of Venkatamakhi; 4 Janya raga lakshana gitas of Gurumurti Sastri; 1 Suladi; 1 Prabandha and 1 Thaya; 2 Ata tala varnas; 2 Pada Varnas; 2 Ragamalikas; 2 Padas; 4 Ashtapadis of Jayadeva; and 4 Tarangas of Narayana Tirtha; 4 Padas of Purandaradas.

36 Kirtanas in the prescribed ragas (*see* under Theory).

Alapana of the prescribed ragas. Ability to render given pallavis in Adi, Rupaka, Triputa and Jhampa talas in the following ragas :—

Todi, Dhanyasi, Mayamalavagaula, Saveri, Bhairavi, Kambhoji, Sankarabharana, Pantuvarali, Purvakalyani and Kalyani.

Ability to render Kalpana svaras to compositions in Adi, Rupaka, Triputa, Chapu and Jhampa talas.

PRACTICAL—SUBSIDIARY.

Number of Compositions as specified in paragraph 1 of the Main syllabus (Practical); all the Compositions prescribed for the Main Examination; and the alapana of the following ragas:—Saurashtra, Darbar, Kanada, Sahana, Athana, Shanmukhapriya, Pantuvarali, Ritigaula, Mukhari, Khamas, Begada and Surati. Rendering of Kalpana svaras to compositions in Adi, Rupaka and Triputa Talas.

Compositions Prescribed.

Preliminary.

1949 and 1950.

Todi—Koluvamare
Dhanyasi—Dhyaname
Mayamalavagaula—Mayatita-svarupini
Saveri—Ramabana
Bauli—Melukovayya
Nadanamakriya—Sivaloka-natharai
Chakravaka—Inka dayaraleda
Malayamaruta—Manasa Etu
Bhairavi—Koluvaiyunnade
Anandabhairavi—O Jagadamba
Ritigaula—Ragaratna
Kharaharapriya—Chakkani-rajamargamu
Kambhoji—Marimari (Tyagaraja's)
Yadukulakambhoji—Etavuna
Kedaragaula—Tulasibilva
Sahana—Giripai
Mohana—En pallikondirayya
Sama—Santamuleka
Khamas—Apudu manasu
Sankarabharana—Akshaya linga vibho
Bilahari—Paridana
Kedara—Samayamide
Begada—Abhimanamennadu
Hamsadhvani—Sri Raghukula
Arabhi—Sadhimchene
Pantuvarali—Siva Siva Siva

Mukhari—Kshinamai
Abhogi—Sabhapatikki
Sriraga—Sri muladhara
Madhyamavati—Evarichchiri
Gaurimanohari—Guruleka
Harikambhoji—Dinamani
Purva Kalyani—Minakshi me mudam
Simhendramadhyama—Nidu charanamule
Kalyani—Birana Varalichchi
Saranga—Enta bhagyamo

Final.

1949 and 1950.

Asaveri	...	Chandram Bhaja
Punnagavarali	...	Kanakasaila
Abiri	...	Viksheham Kada
Gaula	...	Srimahaganapati
Bhupala	...	Dinajanavana
Revagupti	...	Grahabalamemi
Gaulipantu	...	Teratiyyagarada
Saurastra	...	Ninujuchi
Vasanta	...	Natanamadinar
Hindola	...	Samajavaragamana
Kiravani	...	Talachi talachi
Manirangu	...	Mamava Pattabhirama
Darbar	...	Mundu venaka
Nayaki	...	Ni Bhajana
Sriranjani	...	Sogasuga
Huseni	...	Ne tala lenura
Kānada	...	Sri Narada
Devamanohari	...	Evarikai avatara
Surati	...	Edukkittanai
Natakuranji	...	Budhamasrayami
Balahamsa	...	Ninu vina gati
Nilambari	...	Amba Nilambari
Devagandhari	...	Kshirasagara
Purnachandrika	...	Telisi Rama
Athana	...	Sri Rukminisa
Navaroj	...	Hastivadanaya
Kuranji	...	Sivadikshaparu
Suddha Saveri	...	Darini telusukonti
Kannada	...	Bhaja re Bhaja manasa
Nata	...	Jagadananda karaka
Varali	...	Noremi
Ramapriya	...	Korinavara
Shanmukhapriya	...	Mari vere
Latangi	...	Aparadhamulanniyu

Vachaspati	...	Kanta judumi
Hamir Kalyani	...	Venkatasaila

Note.—The Compositions prescribed are only indicative of the standard expected and it is open to the institutions to teach alternative pieces of equal standard. As examples of Compositions of equal standard, the following are suggested:—

Preliminary.

Nadanamakriya	...	Sivalokanathanai
Yadukulakambhoji	...	Kalai thukki

Final.

Asaveri	...	Saranam Saranam
Darbar	...	Inimelakilum

Bachelor of Indian Music Examination.

THEORY

The same as for Sangita Siromani except that the lakshanas of the ragas to be learnt be, in addition to the 20 prescribed for the Intermediate Examination, the following:—

Asaveri	Gaurimanohari
Punnagavarali	Harikambhoji
Mayamalavagaula	Khamas
Gaula	Surati
Bauli	Sama
Gaulipantu	Natakuranji
Chakravaka	Kedara
Bhairava	Hamsadhvani
Saurashtra	Nilambari
Vasanta	Devagandhari
Ritigaula	Purnachandrika
Hindola	Athana
Kiravani	Suddha Saveri
Manirangu	Nata
Madhyamavati	Varali
Darbar	Ramapriya
Nayaki	Purvakalyani
Sriranjani	Shanmukhapriya
Huseni	Simhendramadhyama
Kanada	Saranga

Books prescribed.—

Music Chapters of Bharata's *Natya Sastra.*

Svara and Raga Adhyayas of *Sangita Ratnakara.*

Sangita Sudha.

Chaturdandi Prakasika.

Book for reference.—

Sangita Martanda.

PRACTICAL—MAIN.

35 Alankaras, 10 Sanchari Gitas, 2 Svarajatis, 2 Jatisvaras, 4 Adi Tala Varnas, 4 Ata Tala Varnas, 2 Jhampa Tala Varnas, 2 Raganga raga Lakshana gitas of Venkatamakhi, 4 Janya raga Lakshana gitas of Gurumurthi Sastri, 1 Suladi, 1 Prabandha, 1 Thaya, 2 Ragamalikas, 4 Padas, 2 Ashtapadis, 2 Tarangas, 2 Javalis and 2 Padas of Purandaradas, and 40 Kirtanas representative of the ragas and composers prescribed.

Tuning of the Tambura and the Vina. Alapana of the ragas prescribed under theory. Rendering of kalpana svaras in compositions in the prescribed ragas in Adi, Rupaka, Triputa, Chapu and Jhampa talas.

Pallavi rendering in Todi, Saveri, Bhairavi, Kambhoji, Sankarabharana, Purvakalyani and Kalyani in Adi, Rupaka and Triputa talas.

PRACTICAL—SUBSIDIARY.

Rendering of the alapana of the following ragas in addition to the 20 prescribed in the Intermediate syllabus :—

Vasanta	Huseni
Saurashtra	Surati
Ritigaula	Suddha Saveri
Darbar	Athana
Kanada	Purvakalyani

35 Alankaras, 6 Sanchari gitas, 1 Svarajati, 1 Jatisvara, 4 Adi tala Varnas, 2 Ata tala Varnas, 2 Lakshana gitas, 1 Ragamalika, 2 Padas, 1 Ashtapadi, 1 Taranga, 2 Padas of Purandaradas, and 30 Kirtanas in the prescribed ragas representative of the composers prescribed.

Kalpana svara rendering in the compositions in the prescribed ragas in Adi, Rupaka, Triputa and Jhampa talas.

ANNEXURE I

Forms of Certificate of Attendance.

MATRICULATION EXAMINATION

I hereby certify that....................has kept attendance for not less than 120 days of the previous school year before 10th March in...................School.........................., that he has completed the course of study prescribed for the several classes of a high school, and that his progress and conduct have been satisfactory.

Dated.......................19 .

Headmaster.

INTERMEDIATE EXAMINATION IN ARTS AND SCIENCE.

(a) I certify that the following candidates have kept three-fourths of the attendances prescribed by the... College,............................in the course of instruction followed by them during the two years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the Intermediate Examination in Arts and Science.

(b) I further certify that they have undergone a course of Physical Training prescribed or recognised by the College and have kept three-fourths of the attendances.

Dated.......................19 . *Principal.*

We certify that the candidates with asterisks against their names have satisfactorily completed the course of practical instruction in their respective subjects.

Professor or Lecturer in Mathematics.......................................
Do. do. Physics...
Do. do. Chemistry...
Do. do. Natural Science...
Do. do. Geology...
Do. do. Engineering...
Do. do. Geography...
Do. do. Indian Music..
Do. do. Household Art...

Principal.

No.	Name of Candidate.	Second Language.
	Mathematics, Physics, Chemistry	
1.	... ...	Tamil
2.	... ...	Telugu
3.	... ...	Kannada
	Natural Science, Physics, Chmistry	
1.	... ...	...
2.	... ...	...
3.	... ...	...

B. A. DEGREE EXAMINATION.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the........................College,................ in the course of instruction in Part I (English Language and Literature), Part II (A Second Language), and Part III (one of the optional groups) during the two years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the B.A. Degree Examination.

Dated.......................19 . *Principal.*

We certify that the candidates with asterisks against their names have attended the course of practical instruction in their respective subjects for the B.A. Degree Examination during the two years and that they have satisfactorily completed the course.

Professor or Lecturer in Mathematics...

Do.	*do.*	*Physics...*
Do.	*do.*	*Chemistry...*
Do.	*do.*	*Botany...*
Do.	*do.*	*Zoology...*
Do.	*do.*	*Geology...*
Do.	*do.*	*Mechanical Engineering...........................*
Do.	*do.*	*Electrical Engineering...........................*
Do.	*do.*	*Indian Music...*
Do.	*do.*	*Home Science...*

Principal.

No.	Name of Candidate.	Second Language.	Subsidiary Subject.
	Group (i-a)		
1.	...	Tamil	...
2.	...	Telugu	...
3.	...	Malayalam	...
	Group (ii-a)		
1.	...	Tamil	Physi
2.	...	Telugu	Chemistry
3.	...	Kannada	Botany

$\frac{\text{B.A.}}{\text{B.Sc.}}$ (HONOURS) DEGREE EXAMINATION.

$\frac{\text{PRELIMINARY}}{\text{PART I}}$ EXAMINATION.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the..................................College, ...in the course of instruction in English during one year, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the $\frac{\textit{Preliminary}}{\textit{Part I}}$ Examination for the $\frac{\textit{B.A.}}{\textit{B.Sc.}}$ (Honours) Degree.

Dated......................19 . *Principal.*

No.	Name of Candidate.
1	...
2	...
3	...
4	...

B.A. (HONOURS) DEGREE EXAMINATION.

FINAL EXAMINATION.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the..................................College, ...in the course of instruction followed by them during the three years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the B.A. (Honours) Degree Examination.

Dated......................19 . *Principal.*

No.	Name of Candidate.
	BRANCH I-A—MATHEMATICS.
1	...
2	...
3	...

B.Sc. DEGREE EXAMINATION.

PART I.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the..............................College, ...in the course of instruction in languages during one year, that their conduct and progress have been satisfactory, and that they have completed the course of study prescribed for the examination in Part I for the B.Sc. Degree.

Dated......................*19* . *Principal.*

No.	Name of Candidate.	Language.
1	...	...
2	...	...
3	...	...
4	...	...

$\frac{\text{B.Sc.}}{\text{B.Sc. (Hons.)}}$ DEGREE EXAMINATION.

PART II.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the...................................College, ...in the course of instruction followed by them during the $\frac{\textit{two}}{\textit{three}}$ years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the $\frac{\textit{B.Sc.}}{\textit{B.Sc. (Honours)}}$ Degree.

Dated........................*19* . *Principal.*

We certify that the candidates with asterisks against their names have attended the course of practical instruction in their respective subjects for the $\frac{\textit{B.Sc.}}{\textit{B.Sc. (Honours)}}$ Degree Examination during the $\frac{\textit{two}}{\textit{three}}$ years and that they have satisfactorily completed the course.

Professor or Lecturer	*in*	*Mathematics*..................................
Do.	*do.*	*Physics*..................................
Do.	*do.*	*Chemistry*..................................
Do.	*do.*	*Botany*..................................
Do.	*do.*	*Zoology*..................................
Do.	*do.*	*Geology*..................................
Do.	*do.*	*Mechanical Engineering*....................
Do.	*do.*	*Electrical Engineering*....................
Do.	*do.*	*Home Science*..................................

No.	Name of Candidate.	Main subject.	Subsidiary subject.
1	...	Mathematics	Physics and Chemistry
2	...	Physics ...	Chemistry & Botany
3	...	Chemistry ...	Physics and Botany

DEGREE OF MASTER OF SCIENCE (BY EXAMINATION).

I certify that the following candidates have kept three-fourths of the attendances prescribed by the................*College*,........................ *in the course of instruction followed by them during the academic year, that their conduct and progress have been satisfactory, and that they have completed the course of study prescribed for the Degree of* **M.Sc.** *(by Examination).*

Dated......................*19* . *Principal.*

We certify that the candidates with asterisks against their names have attended the course of practical instruction in their respective subjects for the Degree of M.Sc. (by Examination) during the academic year and that they have satisfactorily completed the course.

Professor or Lecturer	*in*	*Mathematics*..................................
Do.	*do.*	*Physics*..................................
Do.	*do.*	*Chemistry*..................................
Do.	*do.*	*Botany*..................................
Do.	*do.*	*Zoology*..................................
Do.	*do.*	*Geology*..................................

No.	Name of Candidate.
	(i) Mathematics.
1.	...
2.	...
3.	...

ORIENTAL TITLE EXAMINATION.

PRELIMINARY / FINAL } EXAMINATION.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the........................College,................. in the course of instruction followed by them during the two years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the examination.

Dated........... ....19 . *Principal.*

No.	Name of Candidate.
	SIROMANI—BRANCH I.
1.	...
2.	...
3.	...
	VIDVAN—REGULATION (*a*).
1.	...
2.	...
3.	...

B.O.L. (PASS) / (HONOURS) DEGREE EXAMINATION.

I certify that the following candidates have kept three-fourths of the attendances prescribed by the........................College,................. in the course of instruction in Part I (English) during the year,/ Part II (Selected Final Division of the examination for Oriental Titles or Branch) during the two/three years, that their conduct and progress have been satisfactory and that they have completed the Course of study prescribed for the [*B. O. L. (Pass)*]/(*Honours*) *Degree Examination.*

Dated....................19 . *Principal.*

PART I.

No.	Name of Candidate.
1.	...
2.	...
3.	...

PART II.

No.	Name of Candidate.	Selected Group or Branch
1	...	...
2	...	...
3	...	...
4	...	...

SANGITA SIROMANI TITLE EXAMINATION.

PRELIMINAR
FINAL

I certify that the following candidates have kept three-fourths of the attendances prescribed by the................College,...................... in the course of instruction followed by them during the two years, that their conduct and progress have been satisfactory and that they have completed the course of study prescribed for the examination.

Dated......................19 . *Principal.*

PRELIMINARY
PART I

No.	Name of Candidate.
1	...
2	...
3	...

PART II

No	Name of Candidate.	Selected Language.
1	...	...
2	...	...
3	...	...

PART III

No.	Name of Candidate.	Main and Subsidiary subjects.
1	...	...
2	...	...
3	...	...

FINAL

PART I

No.	Name of Candidate.
1	...
2	...
3	...

PART II

No.	Name of Candidate.	Main and Subsidiary subjects.
1	...	...
2	...	...
3	...	...

ANNEXURE II

Time-tables for Examinations.

Time-tables and subjects for examinations.

The order of time and subjects in which the several examinations shall be conducted shall be as set forth in the following tables and the number of marks assignable to each subject shall be as therein specified :—

Provided always

(1) that, in the event of no candidate appearing for any paper in the B. A. (Honours) Degree Examination, the time-tables for that examination may be altered by the Syndicate, but the order of the papers shall, so far as possible, be maintained;

(2) that, unless otherwise determined by the Syndicate, the Practical, Clinical and Oral Examinations shall follow the Written Examination; and

(3) that dates and hours of Practical, Clinical, Oral and *Viva Voce* Examinations shall be notified to the candidates before the Written Examination is over.

Matriculation Examination.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	English—1st Paper	100
Second day...	10—1	English—2nd Paper	100
Third day ...	10—1	Second Language	100
Fourth day...	10—1	Arithmetic and Algebra	100
Fifth day ...	10—1	Geometry	100
Sixth day ...	10—1	Elementary Science	100
Seventh day..	10—1	History	100
Eighth day...	10—1	Geography...	100
		Total ...	800

Intermediate Examination in Arts and Science.

Part I—English.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Shakespeare and Poetry	100
Second day...	10—1	Prose	100
Third day ...	10—1	Composition	100
		Total ...	300

Part II—A Second Language.

Days.	Hours.	Subjects.	Marks.
Twenty-seventh day	10—1	Text-books, Grammar and Idiom ...	100
Twenty-eighth day	10—1	Composition and Translation for Indian languages *or* Translation for other languages ...	100
		Total ...	200

PART III.

GROUP A.

Days.	Hours.	Subjects.	Marks.
Fourth day..	10—12-30	Mathematics—First Paper ...	75
	2— 4-30	Do. Second Paper ...	75
Fifth day ..	10—12-30	Physics—First Paper ...	50
	2— 4-30	Do Second Paper ...	50
Sixth day ...	10—12-30	Chemistry—First Paper ...	50
	2— 4-30	Do Second Paper ...	50
Seventh day.	10—12-30	Natural Science—First Paper ...	50
	2— 4-30	Do Second Paper ...	50
Eighth day...	10—12-30	Geology—First Paper ...	50
	2— 4-30	Do Second Paper ...	50
Ninth day..	10—12-30	Geography—First Paper ...	50
	2— 4-30	Do Second Paper ...	50
Tenth day	10—12-30	Psychology—First Paper ...	75
	2— 4-30	Do Second Paper ...	75
Days and hours of practical Examinations will be notified later.	3 hours	Practical Examinations. Physics, Chemistry, Natural Science, Geology, & Geography ...	
		Practical ...	40
		Note-books ...	10
		Total (of 3 subjects) ...	450

GROUP B.

Days.	Hours.	Subjects.	Marks.
Eleventh day	10--12-30	Logic—First Paper	75
	2--4-30	Do. Second Paper	75
Twelfth day	10--12-30	Indian History—First paper... ...	75
	2—4-30	Do. Second Paper ...	75
Thirteenth day.	10--12-30	Ancient History I—History of Greece.	75
	2—4-30	Do. II—History of Rome ...	75
Fourteenth day	10--12-30	Modern History I—(History of Great Britain and Ireland—Political and Economic)	75
	2—4-30	Modern History II— do. ...	75
Fifteenth day	10--12-30	Islamic History—First Paper ...	75
	2—4-30	Do. Second Paper ...	75
Twenty-eighth day	10—1	A Language: Text-books, Grammar and Idiom	75
Twenty-ninth day.	10—1	A Language: Composition and Translation for Indian languages	75
		or	
		Translation for other languages ...	75
		Total (of 3 subjects) ...	450

GROUP C.

Days.	Hours.	Subjects.	Marks.
Sixteenth day	10—12	Economic History of England and Economic Geography—First Paper.	75
	2—4	Do. Second Paper.	75
Seventeenth day.	10—12	Elements of Commerce and Accountancy First Paper.	75
	2—4	Do. Second Paper.	75
Eighteenth day.	10—12	Agriculture (Written)	75
	3 Hours.	Do. (Practical and Oral) ...	75
Nineteenth day.	10—12	Electrical Engineering—First Paper.	75
	2—4	Do. Second Paper.	75
Twentieth day.	10—12	Mechanical Engineering—First Paper.	75
	2—4	Do. Second Paper.	75
Twenty-first day.	10—12	Surveying—(Written)	75
	2 Hours	Do. (Practical)	75
Twenty-second day.	10—12	Drawing—Written	75
	3 Hours.	Do. Practical	75
Twenty-third day.	10—1	Indian Music—Theory	75
Time and Date will be notified later.		Indian Music—Practical	75
Twenty-fourth day.	10—1	Western Music—Theory	75
Time and Date will be notified later.		Western Music—Practical ...	75
Twenty fifth day.	10—12	Architecture—First Paper ...	75
	2—4	Do. Second Paper ...	75
Twenty-sixth day.	10—1	Household Art—First Paper ...	50
Twenty-seventh day	2—4-30	Do. Second Paper ...	50
Date and hours of Practical Examination will be notified later.	3 hours	Do. Practical ...	40
		Note Books ...	10
		Total (of 3 subjects) ...	450

GROUP D.

Time-tables for examinations under this Group shall be the same as for the Preliminary Part of the several Oriental Title Examinations with an additional paper on Composition or Translation of two hours' duration carrying 50 Marks.

Note:—Every year the exact dates of Part III of the Intermediate Examination will be notified on receipt of information from the constituent and affiliated colleges as to the different groupings of subjects offered by their candidates.

B.A. Degree Examination.

Part I—English Language and Literature.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Composition ...	100
Second day ...	10—1	Modern Prose ...	100
Third day ...	10—1	Shakespeare ...	100
Fourth day ...	10—1	Modern Poetry ...	100
		Total ...	400

Part II—A Second Language.

Days.	Hours.	Subjects.	Marks.
		Classical Languages.	
Fifth day ...	10—1	Text-books, Grammar, etc. ...	100
Sixth day ...	10—1	Translation* ...	100
		Foreign or Indian Languages.	
Fifth day ...	10—1	Text-books, Grammar, etc. ...	100
Sixth day ...	10—1	Composition and Translation ...	100
		Total ...	200

* In the case of Sanskrit, Hebrew, Syriac, Arabic and Persian the papers will include questions on the History of Literature—*vide* Regulations.

Part III—Optional Subjects.

GROUP (i-a)—MATHEMATICS.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	* Geometry ...	90
Eighth day ...	10—1	* Algebra and Trigonometry ...	90
Ninth day ...	10—12	† Dynamics ...	70
do. ...	2—4	* Calculus ...	70
Tenth day ...	10—12	Astronomy ...	80
Eleventh day ...	10—1	Hydrostatics, Properties of Matter and Heat ...	100
		Total ...	500

GROUP (i-b)—MATHEMATICS.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	* Geometry ...	90
Eighth day ...	10—1	* Algebra and Trigonometry ...	90
Ninth day ...	10—12	† Dynamics ...	70
do. ...	2—4	* Calculus ...	70
Tenth day ...	10—1	Optional Subject I ...	90
Eleventh day ...	10—1	Optional Subject II ...	90
		Total ...	500

GROUP (i-c)—STATISTICS.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	* Geometry ...	80
Eighth day ...	10—1	* Algebra and Trigonometry ...	80
Ninth day ...	2—4	* Calculus ...	70
Tenth day ...	10—1	Statistics I ...	90
Eleventh day ...	10—1	Statistics II ...	90
(Date and hour of Practical Examination will be notified later.)	(3 hours)	Practical Examination ...	70
		Note-books ...	20
		Total ...	500

GROUP (ii)—MATHEMATICS MAIN.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	* Geometry ...	100
Eighth day ...	10—1	* Algebra and Trigonometry ...	100
Ninth day ...	10—12	† Dynamics ...	75
Do. ...	2—4	* Calculus ...	75
		Total ...	350

* Papers common to Groups (i-a), (i-b), (i-c) and (ii).
† Papers common to Groups (i-a), (i-b), and (ii).

GROUP (ii)—PHYSICS MAIN.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Dynamics and Hydrostatics ...	60
Eighth day ...	10—1	Properties of Matter & Heat ...	60
Ninth day ...	10—1	Light and Sound ...	60
Tenth day ...	10—1	Electricity and Magnetism ...	60
(Dates and hours of Practical Examination will be notified later.)	(6 hours)	Practical Examination (two exercises). ...	90
		*Laboratory Note-books ...	20
		Total ...	350

GROUP (ii)—CHEMISTRY MAIN.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	General, Theoretical and Physical Chemistry ...	80
Eighth day ...	10—1	Inorganic Chemistry ...	80
Ninth day ...	10—1	Organic Chemistry ...	80
		Practical Examinations	
(Dates and hours of Practical Examinations will be notified later.)	(6 hours)	Inorganic Chemistry ...	80
	(3 hours)	Organic Chemistry ...	30
		* Laboratory Note-books.	...
		Total ...	350

* At the practical examination candidates must submit to the examiner or examiners their laboratory Note-books duly certified by their Professors or Lecturers as a *bona fide* record of work done by the candidates.

Candidates who fail to submit properly certified note-books of their practical work will be debarred from practical examinations.

GROUP (ii)—BOTANY, ZOOLOGY, GEOLOGY AND PHYSIOLOGY AS MAIN SUBJECTS.

Days.	Hours.	Subjects.	*Botany.	Zoology.	Geology.	Physiology.
Seventh day ...	10—1	Written I ...	80	100	80	80
Eighth day ...	10—1	Written II ...	80	100	80	80
(Dates and hours of Practical Examinations will be notified later).	(3 hrs.)	Practical Examination I	75	60	75	75
	(3 hrs.)	Do. II	75	60	75	75
		Collections ...	20	...	20	...
		Laboratory Note-books.	20	30	20	40
		Total ...	350	350	350	350

* Botany ... Written I—Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Histology.
Written II—Morphology and Taxonomy of Angiosperms, Plant Physiology and General Principles.

Group (ii)—(Subsidiary Subjects).

MATHEMATICS.

Days.	Hours.	Subjects.	Marks.
Tenth day ...	10—1	Paper I—Algebra & Calculus.	75
Eleventh day ...	10—1	Paper II—Trigonometry and Analytical Geometry ...	75
		Total ...	150

PHYSICS.

Days.	Hours.	Subjects.	Marks.
Tenth day ...	10—12	Hydrostatics, Properties of Matter and Heat ...	50
Do. ...	2—4	Light, Electricity and Magnetism ...	50
(Dates and hours of Practical Examination will be notified later).	(3 hrs.)	Practical Examination ...	50
		Total ...	150

CHEMISTRY.

Days.	Hours.	Subjects.	Marks.
		Written Examination.	
Tenth day ...	10—1	General and Inorganic Chemistry ...	60
Eleventh day ...	10—12	Organic Chemistry ...	40
		Practical Examination.	
(Dates and hours of Practical Examination will be notified later).	(3 hrs.)	Inorganic Chemistry ...	50
		Total ...	150

BOTANY, ZOOLOGY, GEOLOGY, PHYSIOLOGY, MECHANICAL ENGINEERING, ELECTRICAL ENGINEERING AND ANTHROPOLOGY.

Days.	Hours.	Subjects.	Botany.	Zoology.	Geology.	Physiology.	Mechanical Engg.	Electrical Engg.	Anthropology.
Tenth day...	10—12	I Paper (Written).	50	50	50	50	50	50	50
Do. ...	2—4	II Paper (Written).	50	50	50	50	50	50	50
(Dates and hours of Practical Examination will be notified later).	(3 hrs.)	Practical Examination.	50	50	50	50	50	50	50
		Total ...	150	150	150	150	150	150	150

GROUP (iii-a)—PHILOSOPHY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	European Logic and Theory of Knowledge *or* Political Philosophy ...	100
Eighth day ...	10—1	Indian Logic or Indian Philosophical Classic ...	100
Ninth day ...	10—1	A European Philosophical Classic	100
Eleventh day ...	10—1	Psychology ...	100
Twelfth day ...	10—1	Ethics ...	100
		Total ...	500

GROUP (iii-b)—* * *

GROUP (iii-c)—PSYCHOLOGY.

Seventh day ...	10—1	General Psychology— I Paper ...	100
Eighth day ...	10—1	do. II Paper ...	100
Ninth day ...	10—1	Child or Educational Psychology.	100
Tenth day ...	10—1	Ethics or Political Philosophy ...	100
Eleventh day ...	10—1	General Philosophy (Fundamental Principles)...	100
		Total ...	500

GROUP (iv-a)—HISTORY AND ECONOMICS.

Seventh day ...	10—1	* Politics ...	100
Eighth day ...	10—1	† General Indian History ...	100
Ninth day ...	10—1	** Constitutional History of Great Britain and Ireland ...	100
Tenth day ...	10—1	‡ Outlines of European History ...	100
Eleventh day ...	10—1	†† Economics—General ...	100
		Total ...	500

* The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-d).

† The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-c).

** The question paper in this subject will be common to Groups (iv-a) and (iv-b).

‡ The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-c).

†† The question paper in this subject will be common to Groups (iv-a), (iv-b), (iv-c) and (iv-d).

GROUP (iv-b)—ECONOMICS AND HISTORY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	*Optional Subject—Politics ...	100
Eighth day ...	10—1	†General Indian History ...	100
Ninth day ...	10—1	** Optional Subject—Constitutional History of Great Britain and Ireland ...	100
Tenth day ...	10—1	‡Optional Subject—Outlines of European History ...	100
Eleventh day ...	10—1	†† Economics—General ...	100
Twelfth day ...	10—1	Economics—Special ...	100
Thirteenth day...	10—1	Modern Economic History of England and India ...	100
		Total (5 papers) ...	500

GROUP (iv-c)—POLITICS AND HISTORY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Political Theory ...	100
Eighth day ...	10—1	†General Indian History ...	100
Ninth day ...	10—1	Political Organisation ...	100
Tenth day ...	10—1	‡Outlines of European History ...	100
Eleventh day ...	10—1	†† Economics—General ...	100
		Total ...	500

GROUP (iv-d)—ISLAMIC HISTORY AND CULTURE.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	*Politics ...	100
Eighth day ...	10—1	General History of Islam ...	100
Ninth day ...	10—1	Civilisation and Culture of Islam.	100
Tenth day ...	10—1	History of India with reference to the Role of Islam ...	100
Eleventh day ...	10—1	†† Economics—General ...	100
		Total ...	500

* The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-d).

† The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-c).

**The question paper in this subject will be common to Groups (iv-a) and (iv-b).

‡ The question paper in this subject will be common to Groups (iv-a), (iv-b) and (iv-c).

††The question paper in this subject will be common to Groups (iv-a), (iv-b), (iv-c) and (iv-d).

GROUP (v)—LANGUAGES OTHER THAN ENGLISH, (1) SANSKRIT AND EARLY INDIAN HISTORY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Books of the Early Period ...	80
Eighth day ...	10—1	Books of the Later Period I ...	80
Ninth day ...	10—1	Do. do. II ...	80
Tenth day ...	10—1	Grammar—Historical and Comparative ...	80
Eleventh day ...	10—1	History of Sanskrit Literature ...	80
Twelfth day ...	10—1	Early Indian History ...	100
		Total ...	500

(2) URDU AND INDIAN HISTORY—MUSLIM PERIOD, OR ARABIC OR PERSIAN.

Seventh day ...	10—1	Prose Books ...	80
Eighth day ...	10—1	Poetry ...	80
Ninth day ...	10—1	Translation ...	80
Tenth day ...	10—1	Grammar, including Rhetoric and Prosody ...	80
Eleventh day ...	10—1	History of Language and Literature ...	80
Twelfth day ...	10—1	Indian History—Muslim Period or Arabic or Persian ...	100
		Total ...	500

(3) ARABIC OR PERSIAN AND EARLY MUSLIM HISTORY.

Seventh day ...	10—1	Prose Books ...	80
Eighth day ...	10—1	Poetry ...	80
Ninth day ...	10—1	Translation ...	80
Tenth day ...	10—1	Grammar, including Rhetoric and Prosody ...	80
Eleventh day ...	10—1	History of Arabic or Persian Language and Literature ...	80
Twelfth day ...	10—1	Early Muslim History ...	100
		Total ...	500

(4) A DRAVIDIAN LANGUAGE OR ORIYA OR MARATHI, AND A COGNATE SUBJECT OR SANSKRIT.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Set books and History of Literature I ...	80
Eighth day ...	10—1	Do. II ...	80
Ninth day ...	10—1	History of Language and Grammar ...	80
Tenth day ...	10—1	Comparative Grammar—Dravidian or Gaurian ...	80
Eleventh day ...	10—1	Composition ...	80
Twelfth day ...	10—1	Cognate Subject or Sanskrit ...	100
		Total ...	500

(5) HINDI AND SANSKRIT OR URDU OR INDIAN HISTORY—MUSLIM PERIOD.

Seventh day ...	10—1	Set Books in Poetry (Ancient and Modern) ...	80
Eighth day ...	10—1	Set Books in Prose and Drama ...	80
Ninth day ...	10—1	History of Language and Literature ...	80
Tenth day ...	10—1	Grammar (Historical and Comparative) Rhetoric and Prosody ...	80
Eleventh day ...	10—1	Translation from English into Hindi and Composition ...	80
Twelfth day ...	10—1	Related Language—Sanskrit or Urdu or Cognate Subject—Indian History—Muslim Period..	100
		Total ...	500

(6) GREEK OR LATIN AND GREEK OR ROMAN HISTORY.

Seventh day ...	10—1	Set Books and History of Literature I ...	80
Eighth day ...	10—1	Do. II ...	80
Ninth day ...	10—1	Prose Composition ...	80
Tenth day ...	10—1	Translation of unprepared passages ...	80
Eleventh day ...	10—1	Grammar ...	80
Twelfth day ...	10—1	Greek or Roman History ...	100
		Total ...	500

(7) FRENCH OR GERMAN AND MODERN EUROPEAN HISTORY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Set Books and History of Literature I ...	80
Eighth day ...	10—1	Do. II ...	80
Ninth day ...	10—1	History of Language ...	80
Tenth day ...	10—1	Composition ...	80
Eleventh day ...	10—1	Translation ...	80
Twelfth day ...	10—1	Modern European History ...	100
		Total ...	500

(8) HEBREW AND HISTORY OF THE JEWS.

Seventh day ...	10—1	Set Books I	80
Eighth day ...	10—1	Do. II ...	80
Ninth day ...	10—1	Translation ...	80
Tenth day ...	10—1	Grammar ...	80
Eleventh day ...	10—1	History of Language and Literature ...	80
Twelfth day ...	10—1	History of the Jews ...	100
		Total ...	500

(9) SYRIAC AND HISTORY OF THE SYRIANS.

Seventh day ...	10—1	Set Books I ...	80
Eighth day ...	10—1	Do. II ...	80
Ninth day ...	10—1	Translation ...	80
Tenth day ...	10—1	Grammar ...	80
Eleventh day ...	10—1	History of Language and Literature ...	80
Twelfth day ...	10—1	History of the Syrians ...	100
		Total ...	500

GROUP (vi)—INDIAN MUSIC.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Theory (1st Paper) ...	150
Eighth day ...	10—1	Theory (2nd Paper) ...	150
(Dates and hours will be notified	3 hrs.	Practical Examination I ...	100
later).	3 hrs.	Do. do. II ...	100
		Total ...	500

GROUP (vii)—WESTERN MUSIC.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Theory (1st Paper) ...	150
Eighth day ...	10—1	Theory (2nd Paper) ...	150
(Dates and hours will be notified	3 hrs.	Practical Examination I ...	100
later).	3 hrs.	Do. do. II ...	100
		Total ...	500

GROUP (viii)—GEOGRAPHY.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Regional Geography of India ...	80
Eighth day ...	10—1	General Regional Geography of the World.	80
Ninth day ...	10—1	Physical Basis of Geography ...	80
Tenth day ...	10—1	* Economic Geography ...	80
Eleventh day ...	10—1	* Historical and Political Geography.	80
Twelfth day ...	10—1	* Anthropo-Geography ...	80
Thirteenth day	10—1	* Bio-Geography ...	80
Fourteenth day	10—1	Practical Geography ...	80
		Do. do. —Note Books...	20
		Total ...	500

GROUP (ix)—HOME SCIENCE.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Household Economics ...	100
Eighth day ...	10—1	Bacteriology and Hygiene ...	80
Ninth day ...	10—1	Physiology and Nutrition ...	80
Tenth day ...	10—1	Applied Physical Science ...	80
		Practical Examinations.	
(Dates and hours	3 hrs.	Bacteriology and Hygiene ...	50
will be notified	3 hrs.	Physiology and Nutrition ...	50
later).	3 hrs.	Applied Physical Science ...	60
		Total ...	500

* Any two of the subjects to be taken.

B.A. (Honours) Degree Examination.

Preliminary Examination.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	English Composition ...	100
Second day ...	10—1	English Prose or English History.	100
		Total ...	200

Final Examination.

BRANCH I-A—MATHEMATICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Pure Mathematics I ...	175
Second day ...	10—1	Applied Mathematics I ...	175
Third day ...	10—1	*Pure Mathematics II ...	175
Fourth day ...	10—1	Applied Mathematics II ...	175
Fifth day ...	10—1	*Pure Mathematics III ...	175
Sixth day ...	10—1	Applied Mathematics III ...	175
Seventh day ...	10—1	Optional Subject I ...	175
Eighth day ...	10—1	Optional Subject II ...	175
		Total ...	1,400

BRANCH I-B—STATISTICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Pure Mathematics I ...	175
Second day ...	10—1	Statistics I ...	175
Third day ...	10—1	*Pure Mathematics II ...	175
Fourth day ...	10—1	Statistics II ...	175
Fifth day ...	10—1	*Pure Mathematics III ...	175
Sixth day ...	10—1	Statistics III ...	175
Seventh day ...	10—1	General Algebra ...	175
(Date and hours of Practical Examination will be notified later).	(3 hours)	Practical Examination ...	150
		Record Note-books ...	25
		Total ...	1,400

*Common to Branches I-A and I-B.

BRANCH II-A—PHILOSOPHY. **

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	††Essay ...	200
Second day ...	10—1	††General Psychology ...	200
Third day ...	10—1	Theory of Knowledge *or* Ethics ...	200
Fourth day ...	10—1	Outlines of Indian Philosophy ...	200
Fifth day ...	10—1	European Philosophy (Descartes to Kant) ...	200
Sixth day ...	10—1	Special Subject I ...	200
Seventh day ...	10—1	Special Subject II ...	200
		Total ...	1,400

**Candidates will be informed of the dates and hours of *viva voce* examination before the written examination is over.

BRANCH II-B—PSYCHOLOGY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	††Essay ...	200
Second day ...	10—1	††General Psychology ...	200
Third day ...	10—1	Schools of Psychology ...	200
Fourth day ...	10—1	Social Psychology ...	200
Fifth day ...	10—1	Psychopathology and Mental Hygiene ...	200
Sixth day ...	10—1	Special Subject I ...	200
Seventh day ...	10—1	Special Subject II ...	200
		Total ...	1,400

††Common papers for Branches II-A and II-B

BRANCH III—HISTORY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Essay ...	200
Second day ...	10—1	†The History of India ...	200
Third day ...	10—1	‡Politics—General ...	200
Fourth day ...	10—1	§Economics—General ...	200
Fifth day ...	10—1	Constitutional History of Great Britain and Ireland ...	200
Seventh day ...	10—1	Special Subject I ...	200
Eighth day ...	10—1	Special Subject II ...	200
		Total ...	1,400

* Common to Branches III, IV, V and XIII.
† Common to Branches III and IV.
‡ Common to Branches III, IV and XIII.
§ Common to Branches III, V and XIII.

BRANCH IV—ECONOMICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	* Essay ...	200
Second day ...	10—1	† The History of India (Optional)	200
Third day ...	10—1	‡ Politics—General (Optional) ...	200
Fourth day ...	10—1	Principles of Economics ...	200
Fifth day ...	10—1	Currency, Banking and International Trade ...	200
Sixth day ...	10—1	Modern Economic History ...	200
Seventh day ...	10—1	Public Finance ...	200
Eighth day ...	10—1	Economics—Special Subject (Optional) ...	200
Ninth day ...	10—1	Statistics—Special Subject (Optional) ...	200
		Total (for seven papers) ...	1,400

(Candidates should select two out of the four Optional Subjects).

BRANCH V—POLITICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	* Essay ...	200
Second day ...	10—1	Political Theory—The Theory of the State ...	200
Third day ...	10—1	History of Political Thought ...	200
Fourth day ...	10—1	$ Economics—General ...	200
Fifth day ...	10—1	Political Institutions ...	200
Sixth day ...	10—1	History of Administrative and Constitutional Development in India	200
Seventh day ...	10—1	Public Administration--Principles and Practice (Optional) ...	200
Eighth day ...	10—1	A period or topic of British Indian Administration (Optional) ...	200
		Total (for seven papers) ...	1,400

* Common to Branches III, IV, V and XIII.
† Common to Branches III and IV.
‡ Common to Branches III, IV and XIII.
$ Common to Branches III, V and XIII.

BRANCH VI—

* * *

BRANCH VII—ENGLISH LANGUAGE AND LITERATURE.*

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Beowulf and other Old English Texts ...	150
Second day ..	10—1	Chaucer and other Middle English Texts ...	150
Third day ...	10—1	History of the English Language ...	150
Fourth day ...	10—1	Shakespeare ...	175
Fifth day ..	10—1	Modern English Literature, First Paper ...	125
Sixth day ..	10—1	Modern English Literature, Second Paper ...	125
Seventh day ...	10—1	Modern English Literature, Third Paper ...	125
Eighth day ...	10—1	Essay ...	100
Ninth day ...	10—1	Special Period—First Paper ...	150
Tenth day ...	10—1	Special Period—Second Paper ...	150
		Total ...	1,400

*Candidates will be informed of the dates and hours of the *viva voce* examination before the written examination is over.

BRANCH VIII—SANSKRIT LANGUAGE AND LITERATURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Comparative Philology and Comparative Grammar ...	200
Second day ...	10—1	History of the Sanskrit Language and Literature ...	150
Third day ...	10—1	Prescribed Text-books—General...	150
Fourth day ...	10—1	Grammar, Prosody and Poetics ...	150
Fifth day ...	10—1	Special Subject I—First Paper ...	150
Sixth day ...	10—1	Do. Second Paper ...	150
Seventh day ...	10—1	Special Subject II—First Paper ...	150
Eighth day ...	10—1	Do. Second Paper ...	150
Ninth day ...	10—1	Essay ...	150
		Total ...	1,400

BRANCH IX—ARABIC LANGUAGE AND LITERATURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Comparative Philology and Comparative Grammar ...	200
Second day ...	10—1	History of the Arabic Language and Literature ...	150
Third day ...	10—1	Prescribed Text-books—General ...	150
Fourth day ...	10—1	Grammar, Prosody and Poetics ...	150
Fifth day ...	10—1	Translation ...	100
Sixth day ...	10—1	Prescribed Text-books-Special I ...	150
Seventh day ...	10—1	Do. do. do. II	150
Eighth day ...	10—1	Do. do. do. III	150
Ninth day ...	10—1	Essay ...	150
		Total ...	1,400

BRANCH X—SYRIAC LANGUAGE AND LITERATURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Comparative Philology and Comparative Grammar ...	200
Second day ...	10—1	History of the Syriac Language and Literature ...	150
Third day ...	10—1	Prescribed Text-books—General...	150
Fourth day ...	10—1	Grammar, Prosody and Poetics ...	150
Fifth day ...	10—1	Translation ...	150
Sixth day ...	10—1	Prescribed Text-books—Special I..	150
Seventh day ...	10—1	Prescribed Text-books—Special II	150
Eighth day ...	10—1	Prescribed Text-books--Special III	150
Ninth day ...	10—1	Essay ...	150
		Total ...	1,400

BRANCH XI—A DRAVIDIAN LANGUAGE OR URDU AND ITS LITERATURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	The History of the Language and Philology ...	200
Second day ...	10—1	History of Literature and Literary Criticism ...	200
Third day ...	10—1	Prescribed Text-books (General)...	150
Fourth day ...	10—1	Prescribed Text-books (Special) ...	150
Fifth day ...	10—1	Grammar, Prosody and Poetics ...	150
Sixth day ...	10—1	Essay ...	200
Seventh day ...	10—1	Translation from English into the Language ...	150
Eighth day ...	10—1	South Indian History and Inscriptions (in the case of Dravidian Languages) and Arabic, Persian or Hindi (in the case of Urdu)...	200
		Total ...	1,400

BRANCH XII—HINDI LANGUAGE AND LITERATURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Essay ...	200
Second day ...	10—1	The History of the Language and Philology ...	200
Third day ...	10—1	Prescribed Text-books—I Ancient	150
Fourth day ...	10—1	do. II Modern	150
Fifth day ...	10—1	Grammar, Prosody and Poetics...	150
Sixth day ...	10—1	The History of Literature and Literary Criticism ...	200
Seventh day ...	10—1	Subsidiary Language—Sanskrit...	200
Eighth day ...	10—1	Translation from English into Hindi ...	150
		Total ...	1,400

BRANCH XIII—ISLAMIC HISTORY AND CULTURE.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Essay ...	200
Second day ...	10—1	Advanced History of Islam ...	200
Third day ...	10—1	†Politics ...	200
Fourth day ...	10—1	‡Economics (General) ...	200
Fifth day ...	10—1	Islamic Law and Constitution ...	200
Sixth day ...	10—1	Special Subject I ...	200
Seventh day ...	10—1	Special Subject II ...	200
		Total ...	1,400

* Common to Branches III, IV, V and XIII.
† Common to Branches III, IV and XIII.
‡ Common to Branches III, V and XIII.

M. A. Degree Examination.

The time-tables, marks, etc., for the M.A. Degree Examination shall be the same in all Branches as for the Final Examination for the B.A. (Honours) Degree in the corresponding Branch.

B.Sc. Degree Examination.

Part I.

(a) ENGLISH.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	English Composition ...	100
Second day ...	10—1	English Prose ...	100
		Total ...	200

(b) (i) CLASSICAL AND MODERN (FOREIGN) LANGUAGES.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Translation ...	100
Second day ...	10—1	Prescribed Text-books ...	100
		Total ...	200

(b) (ii) MODERN (INDIAN) LANGUAGES.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Translation ...	100
Second day ...	10—1	Composition ...	100
		Total ...	200

PART II.

MATHEMATICS (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Algebra and Trigonometry ...	100
Eighth day ...	10—1	Geometry ...	100
Ninth day ...	10—1	Calculus ...	100
Tenth day ...	10—1	Dynamics ...	100
		Total ...	400

STATISTICS (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Paper I—Probability, Distributions, etc. ...	125
Eighth day ...	10—1	Paper II—Measures of Central Tendency, Dispersion, etc. ...	125
(Dates and hours of Practical Examinations will be notified later.)	(2½ hrs.)	Practical Examination I ...	60
	(2½ hrs.)	Do. II ...	60
		Practical Note-book ...	30
		Total ...	400

PHYSICS (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Dynamics and Hydrostatics ...	70
Eighth day ...	10—1	Properties of Matter and Heat ...	70
Ninth day ...	10—1	Light and Sound ...	70
Tenth day ...	10—1	Electricity and Magnetism ...	70
(Dates and hours of Practical Examination will be notified later.)	(6 hrs.)	Practical Examination ...	100
		Laboratory Note-books ...	20
		Total ...	400

CHEMISTRY (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	General Chemistry	80
Eighth day ...	10—1	Inorganic Chemistry	80
Ninth day ...	10—1	Organic Chemistry	100
(Dates and hours of Practical Examinations will be notified later.)	(3 hours) (6 hours)	Practical Examination (Organic). Do. do (Inorganic). Laboratory Note-books ...	40 80 20
		Total ...	400

BOTANY (MAIN).

Seventh day ...	10—1	Written Examination I ...	100
Eighth day ...	10—1	Do. do. II ...	100
(Dates and hours of Practical Examinations will be notified later.)	(3 hours)	Practical Examination I ...	70
	(3 hours)	Do. do. II ...	70
		Laboratory Note-books ...	40
		Collection of Plants ...	20
		Total ...	400

ZOOLOGY (MAIN).

Seventh day ...	10—1	Written Examination I ...	120
Eighth day ...	10—1	Do. do. II ...	120
(Dates and hours of Practical Examinations will be notified later.)	(3 hours)	Practical Examination I ...	60
	(3 hours)	Do. do. II ...	60
		Laboratory Note-books ...	40
		Total ...	400

GEOLOGY (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Written Examination I ...	100
Eighth day ...	10—1	Do. do. II ...	100
(Dates and hours of Practical Examintions will be notified later).	(3 hrs.)	Practical Examination I ...	75
	(3 hrs.)	Do. do. II ...	75
		Laboratory Note-books ...	25
		Collection and Field Work Notes..	25
		Total ...	400

PHYSIOLOGY (MAIN).

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Written Examination I ...	120
Eighth day ...	10—1	Do. do. II ...	120
(Dates and hours of Practical Examinations will be notified later).	(3 hrs.)	Practical Examination I ...	60
		Do. do. II ...	60
	(3hrs.)	Laboratory Note-books ...	40
		Total ...	400

HOME SCIENCE.

Days.	Hours.	Subjects.	Marks.
Seventh day ...	10—1	Household Economics ...	75
Eighth day ...	10—1	Rural Economics and Social Economics ...	100
Ninth day ...	10—1	Bacteriology and Hygiene ...	75
Tenth day ...	10—1	Physiology ...	75
Eleventh day ...	10—1	Nutrition ...	75
Twelfth day ...	10—1	Applied Physical Science— (a) Chemistry ... 60 (b) Physics ... 40 ...	100
		Practical Examinations.	
(Dates and hours of Practical Examinations will be notified later)	(3 hours)	Bacteriology and Hygiene ...	40
	,,	Physiology	40
	,,	Nutrition ...	40
	(4 hours)	Applied Physical Science ...	40
		Practical Record Books.	
		Bacteriology and Hygiene ...	10
		Physiology ...	10
		Nutrition ...	10
		Applied Physical Science ...	10
		Total ...	700

SUBSIDIARY SUBJECTS.

STATISTICS (SUBSIDIARY).

Days.	Hours.	Subjects.	Marks.
Tenth day ...	10—1	Written Examination— Statistical Method ...	75
(Date and hours of Practical Examination will be notified later)	(3 hours)	Practical Examination ...	75
		Total ...	150

The time-tables, marks, etc., for the other Subsidiary Subjects shall be the same as for the Subsidiary Subjects under B.A. Degree Examination.

B.Sc. (Honours) Degree Examination.

PART I—ENGLISH.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Composition ...	100
Second day ...	10—1	Prose ...	100
		Total ...	200

FRENCH OR GERMAN.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Translation ...	100
Second day ...	10—1	Prescribed Text-books ...	100
		Total ...	200

PART II.

BRANCH I-A—MATHEMATICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Pure Mathematics I ...	175
Second day ...	10—1	Applied Mathematics I ...	175
Third day ...	10—1	*Pure Mathematics II ...	175
Fourth day ...	10—1	Applied Mathematics II ...	175
Fifth day ...	10—1	*Pure Mathematics III ...	175
Sixth day ...	10—1	Applied Mathematics III ...	175
Seventh day ...	10—1	Optional Subject I ...	175
Eighth day ...	10—1	Optional Subject II ...	175
		Total ...	1,400

BRANCH I-B—STATISTICS.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	*Pure Mathematics I ...	175
Second day ...	10—1	Statistics I ...	175
Third day ...	10—1	*Pure Mathematics II ...	175
Fourth day ...	10—1	Statistics II ...	175
Fifth day ...	10—1	*Pure Mathematics III ...	175
Sixth day ...	10—1	Statistics III ...	175
Seventh day ...	10—1	General Algebra ...	175
(Date and hours of Practical Examination will be notified later).	(3 hrs.)	Practical Examination ...	150
		Record Note-books ...	25
		Total ...	1,400

* Common to Branches I-A and I-B.

BRANCH II—PHYSICS (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Properties of Matter ...	125
Second day ...	10—1	Heat and Sound ...	125
Third day ...	10—1	Sound and Light ...	125
Fourth day ...	10—1	Magnetism and Electricity ...	125
Fifth day ...	10—1	Modern Physics I ...	125
Sixth day ...	10—1	Optional Subject or Modern Physics II	125
(Dates and hours of Practical Examinations will be notified later).	(3 hours each).	Four Practical Examinations :	
		Properties of Matter ...	100
		Heat and Sound ...	100
		Sound and Light ...	100
		Magnetism and Electricity ...	100
		Laboratory Record Books ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

BRANCH III—CHEMISTRY (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	General Chemistry ...	150
Second day ...	10—1	Inorganic Chemistry ...	150
Third day ...	10—1	Physical Chemistry ...	150
Fourth day ...	10—1	Organic Chemistry ...	150
Fifth day ...	10—1	Special (Optional) Subject ...	100
(Dates and hours of Practical Examinations will be notified later).	(6 hours each)	Four Practical Examinations :	
		Physical Chemistry ...	100
		Inorganic Qualitative Analysis	75
		Inorganic Quantitative Analysis	125
		Organic Chemistry ...	150
		Laboratory Records ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

BRANCH IV—BOTANY (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Written Examination I (Algae, Fungi, etc.) ...	150
Second day ...	10—1	Written Examination II (Pteridophytes) ...	150
Third day ...	10—1	Written Examination III (Histology) ...	150
Fourth day ...	10—1	Written Examination IV (Systematic Botany) ...	150
Fifth day ...	10—1	Written Examination V (Special Subject) ...	150
(Dates and hours of Practical Examinations will be notified later).	(3 hours each.)	Practical Examination I ...	100
		Do. II ...	100
		Do. III ...	100
		Do IV ...	100
		Laboratory Note-books and Collections ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

BRANCH V—ZOOLOGY (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Written Examn. I—Invertebrata...	150
Second day ...	10—1	Do. II—Chordata ...	150
Third day ...	10—1	Do. III—Vertebrate Embryology ; Palaeontology ...	150
Fourth day ...	10—1	Do. IV—Genetics, Cytology and General Principles ...	150
Fifth day ...	10—1	Do. V—Special subject	150
(Dates and hours of Practical Examinations will be notified later).	(3 hours each.)	Practical Examination I ...	100
		Do. II ...	100
		Do. III ...	100
		Do. IV ...	100
		Laboratory Note-books ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

BRANCH VI—GEOLOGY (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Written Examination I—General Geology and Structural ...	150
Second day ...	10—1	Do. II—Stratigraphy and Palaeontology ...	150
Third day ...	10—1	Do. III—Mineralogy ...	150
Fourth day ...	10—1	Do. IV—Petrology ...	150
Fifth day ...	10—1	Special Subject ...	150
(Dates and hours of Practical Examinations will be notified later).	(3 hours each.)	Practical Examination I ...	100
		Do. II ...	100
		Do. III ...	100
		Do. IV ...	100
		Laboratory Note-books and other records re Practical Work and Specimens ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

BRANCH VII—PHYSIOLOGY (MAIN SUBJECT).

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Written Exam. I—General Physiology ...	150
Second day ...	10—1	Do. II—Human Physiology ...	150
Third day ...	10—1	Do. III—Human Physiology ...	150
Fourth day ...	10—1	Do. IV—Biochemistry ...	150
Fifth day ...	10—1	Do. V—Special Subject...	150
(Dates and hours of Practical Examinations will be notified later).	(3 hours each.)	Practical Examination I ...	100
		Do. II ...	100
		Do. III ...	100
		Do. IV ...	100
		Laboratory Records ...	100
		Total marks—Main Subject ...	1,250
		Subsidiary Subject ...	150
		Grand Total ...	1,400

SUBSIDIARY SUBJECTS.

The time-tables, marks, etc. for the Subsidiary Subjects shall be the same as for the Subsidiary Subjects under B.A. and B.Sc. Degree Examinations.

M.Sc. Degree Examination.

Days.	Hours.	Subjects.	Marks.
		(All Subjects other than Mathematics).	
First day ...	10—1	Written Paper I ...	150
Second day ...	10—1	Written Paper II ...	150
(Dates and hours of Practical and *Viva Voce* Examinations will be notified later.)		Practical Examination I ...	150
		Practical Examination II ...	150
		Viva Voce ...	100
		Total ...	700

Examinations for Titles in Oriental Learning.

SIROMANI

MIMAMSA, VEDANTA, NYAYA, VYAKARANA, SAHITYA, JYOTISA OR AYURVEDA.

PRELIMINARY

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books—General I ...	100
Second day .	10—1	Prescribed Text-books—General II ...	100
Third day ...	10—1	Prescribed Text-books—General III ...	100
Fourth day	10—1	Prescribed Text-books—Special I ...	100
Fifth day ...	10—1	Prescribed Text-books—Special II ...	100
Sixth day ...	10—1	Prescribed Text-books—Special III ...	100
		Total ...	600

FINAL

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	History of Sanskrit Language ...	100
Second day.	10—1	History of Sanskrit Literature ...	100
Third day ...	10—1	Essay ...	100
Fourth day.	10—1	Prescribed Text-books—Special I ...	100
Fifth day ...	10—1	Prescribed Text-books—Special II ...	100
Sixth day ...	10—1	Prescribed Text-books—Special III ...	100
		Total ...	600

VIDVAN (a)—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in Sanskrit I ...	100
Second day...	10—1	Prescribed Text-books in Sanskrit II ...	100
Third day ...	10—1	Prescribed Text-books in Sanskrit III...	100
Fourth day...	10—1	Prescribed Text-books in the Selected Language I ...	100
Fifth day ...	10—1	Prescribed Text-books in the Selected Language II ...	100
Sixth day ...	10—1	Composition in the Selected Language...	100
		Total ...	600

VIDVAN (a)—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in Sanskrit I ...	100
Second day...	10—1	Prescribed Text-books in Sanskrit II ...	100
Third day ...	10—1	History of Sanskrit Language and Literature ...	100
Fourth day...	10—1	Prescribed Text-books in the Selected Indian Language I ...	100
Fifth day ...	10—1	Prescribed Text-books in the Selected Indian Language II ...	100
Sixth day ...	10—1	Grammar, Prosody and Poetics ...	100
		Total ...	600

VIDVAN (b)—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in the Main Language I ...	100
Second day...	10—1	Prescribed Text-books in the Main Language II ...	100
Third day ..	10—1	Composition in the Main Language ...	100
Fourth day...	10—1	Grammar ...	100
Fifth day ...	10—1	Prosody and Poetics ...	100
Sixth day ...	10—1	Sanskrit ...	100
		Total ...	600

VIDVAN (*b*)—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in the Main Language I ...	100
Second day...	10—1	Prescribed Text-books in the Main Language II ...	100
Third day ...	10—1	History of Language and Literature ...	100
Fourth day...	10—1	Grammar ...	100
Fifth day ...	10—1	Prosody and Poetics ...	100
Sixth day ...	10—1	Sanskrit ...	100
		Total ...	600

VIDVAN (*c*)

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VIDVAN (*d*)—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books—I ...	100
Second day...	10—1	Prescribed Text-books—II ...	100
Third day ...	10—1	Composition ...	100
Fourth day...	10—1	Grammar I ...	100
Fifth day ...	10—1	Grammar II ...	100
Sixth day ...	10—1	History of South India ...	100
		Total ...	600

VIDVAN (*d*)—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books I ...	100
Second day...	10—1	Prescribed Text-books II ...	100
Third day ...	10—1	Advanced Grammar, Prosody and Poetics I ...	100
Fourth day...	10—1	Advanced Grammar, Prosody and Poetics II ...	100
Fifth day ...	10—1	History of Language and Literature ...	100
Sixth day ...	10—1	Inscriptions ...	100
		Total ...	600

AFZAL-UL-ULAMA—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Tafsir, Hadith and Usul-i-Hadith ...	100
Second day...	10—1	Fiqh, ' Aqa'id and Mantiq ...	100
Third day ...	10—1	Prose and Poetry Text-books ...	100
Fourth day...	10—1	History of Arabic Language and Literature ...	100
Fifth day ...	10—1	Translation from Arabic into Urdu, Tamil or Malayalam and *vice versa*...	100
Sixth day ...	10—1	Grammar, Rhetoric and Prosody ...	100
		Total ...	600

AFZAL-UL-ULAMA—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Tafsir, Hadith and Ilmul-Hadith ...	100
Second day...	10—1	Fiqh, 'Usul'-ul Fiqh and Ilmul-Kalam ...	100
Third day ...	10—1	Prose and Poetry Text-books ...	100
Fourth day...	10—1	History of Arabic Language and Literature ...	100
Fifth day ...	10—1	Falsafah and Balaghat ...	100
Sixth day ...	10—1	Islamic History ...	100
		Total ...	600

MUNSHI-I-FAZIL—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Persian Prose Text-books ...	100
Second day...	10—1	Persian Poetry Text-books ...	100
Third day ...	10—1	Grammar, Rhetoric and Prosody ...	100
Fourth day...	10—1	Islamic History ...	100
Fifth day ...	10—1	Prescribed Text-books in Urdu ...	100
Sixth day ...	10—1	Translation from Persian into Urdu and *vice versa* ...	100
		Total ...	600

MUNSHI-I-FAZIL—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Persian Prose Text-books ...	100
Second day...	10—1	Persian Poetry Text-books ...	100
Third day ...	10—1	History of Persiān Language and Literature ...	100
Fourth day...	10—1	Islamic History with particular reference to Persia ...	100
Fifth day ...	10—1	Urdu Texts ...	100
Sixth day ...	10—1	Translation from Persian into Urdu and *vice versa* ...	100
		Total ...	600

ADIB-I-FAZIL—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Urdu Prose Text-books ...	100
Second day...	10—1	Urdu Poetry Text-books ...	100
Third day ...	10—1	Grammar, Rhetoric and Prosody ...	100
Fourth day...	10—1	Islamic History ...	100
Fifth day ...	10—1	Prescribed Text-books in Persian,... Tamil or Malayalam ...	100
Sixth day ...	10—1	History of Urdu Language and Literature ...	100
		Total ...	600

ADIB-I-FAZIL—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Urdu Prose Text-books ...	100
Second day...	10—1	Urdu Poetry Text-books ...	100
Third day ...	10—1	Islamic History ...	100
Fourth day...	10—1	Prescribed Text-books in Persian ...	100
Fifth day ...	10—1	History of Urdu Language and Literature ...	100
Sixth day ...	10—1	One of the following authors :— 1. Shibli 4. Sir Sayyid 2. Hali 5. Iqbal 3. Sarshar 6. Sharar	100
		Total ...	600

TABIB-I-KAMIL—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Kulliyath ...	100
Second day...	10—1	Tashrihul A'da ...	100
Third day ...	10—1	Kimiyah and Manafi ul A'da ...	100
Fourth day...	10—1	'Ilmul Adwiyat' was Saydalah ...	100
Fifth day ...	10—1	Tarikhi Tib ...	100
Sixth day ...	10—1	Hifsan-i-Sibat ...	100
		Total ...	600

TABIE-I-KAMIL—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	'Ilmul Tashkhis ...	100
Second day...	10—1	Mu'alajat General ...	100
Third day ...	10—1	Do. 'Ilmul Jarahat ...	100
Fourth day...	10—1	'Ilmul Amrad Wal Jarathim ...	100
Fifth day ...	10—1	Amrad-i-Niswan was Sibyan wa Ilmul Qabilah ...	100
Sixth day ...	10—1	Tibbi Qanuni wa 'Ilmus Sumum ...	100
		Total ...	600

AFZAL-UL-ATIBBA—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Kulliyath ...	100
Second day...	10—1	Tashrihul A'da ...	100
Third day ...	10—1	Kimiyah and Manafi'ul-A'da ...	100
Fourth day...	10—1	'Ilmul Adwiyah was Saydalah ...	100
Fifth day ...	10—1	'Ilmus Sihhat ...	100
Sixth day ...	10—1	Tarikhi Tib ...	100
		Total ...	600

AFZAL-UL-ATIBBA—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	'Ilmul Tashkhis ...	100
Second day...	10—1	Mu'alajat General ...	100
Third day ...	10—1	Do. 'Ilmul Jarahat ...	100
Fourth day...	10—1	'Ilmul Amrad Wa 'Ilmul Jarathim ...	100
Fifth day ...	10—1	'Ilmul Amrad-al-atfal-wan Niswan wa 'Ilmul Qabilah ...	100
Sixth day ...	10—1	Tibb-i-Qanuni and 'Ilmul Sumum ...	100
		Total ...	600

MALPAN—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Syriac Prose Text-books ...	100
Second day...	10—1	Syriac Poetry Text-books ...	100
Third day ...	10—1	History of the Syriac Language and Literature ..	100
Fourth day...	10—1	Translation from Syriac into Tamil or Malayalam or English ...	100
Fifth day ...	10—1	Translation from English, Tamil or Malayalam into Syriac ...	100
Sixth day ...	10—1	Composition in Syriac ...	100
		Total ...	600

MALPAN—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Syriac Prose Text-books ...	100
Second day...	10—1	Syriac Poetry Text-books ...	100
Third day ...	10—1	History of the Syriac Language and Literature ...	100
Fourth day...	10—1	Translation from Syriac into Tamil or Malayalam or English ...	100
Fifth day ...	10—1	Translation from English, Tamil or Malayalam into Syriac ...	100
Sixth day ...	10—1	Composition in Syriac ...	100
		Total ...	600

SOPPAR—PRELIMINARY.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Syriac Prose ...	100
Second day..	10—1	Syriac Poetry ...	100
Third day ...	10—1	Translation from Syriac into Tamil or Malayalam or English ...	100
Fourth day...	10—1	Translation from English, Tamil or Malayalam into Syriac ...	100
Fifth day ...	10—1	Composition in Syriac ...	100
Sixth day ...	10—1	Hebrew Prose and Poetry ...	100
		Total ...	600

SOPPAR—FINAL.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Syriac Prose ...	100
Second day...	10—1	Syriac Poetry ...	100
Third day ...	10—1	Translation from English, Tamil or Malayalam into Syriac ...	100
Fourth day...	10—1	Translation from Syriac into Tamil or Malayalam or English ...	100
Fifth day ...	10—1	Composition in Syriac ...	100
Sixth day ...	10—1	Hebrew Prose and Poetry ...	100
		Total ...	600

B.O.L. Degree Examination

Part I.—The scheme of examination and of marks shall be the same as for Part I of the B.Sc. (Pass) Degree Examination.

Part II—The scheme of Examination and of marks shall be the same as for the Final Division of the examination for *any one* of the Oriental Titles and the paper on "General Indian History" for the B.A. Degree Examination under Group (iv-a).

B.O.L. (Honours) Degree Examination

PART I—ENGLISH.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	English Composition ...	100
Second day ...	10—1	English Prose ...	100
		Total ...	200

PART II—OPTIONAL BRANCHES.

BRANCH I—SANSKRIT.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	History of Sanskrit Language and Literature ...	200
Second day...	10—1	The History of India * ...	150
Third day ...	10—1	Prescribed Text-books—Special I ...	175
Fourth day...	10—1	Do. Do. II ...	175
Fifth day ...	10—1	Do. Do. III ...	175
Sixth day ...	10—1	Do. Do. IV ...	175
Seventh day..	10—1	Do. Do. V ...	175
Eighth day...	10—1	Essay ...	175
		Total ...	1,400

* The paper shall be the same as for the B.A. (Hons.) Degree Examination, Branch III—History.

BRANCH II—One of the following Languages :—
TAMIL, TELUGU, KANNADA, MALAYALAM.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books—I ...	175
Second day...	10—1	The History of India * ...	150
Third day ...	10—1	Prescribed Text-books—II ...	175
Fourth day...	10—1	Cognate Language or Special Period or Special Branch of Literature ...	175
Fifth day ...	10—1	History of Language and Philology ...	175
Sixth day ...	10—1	Grammar ...	200
Seventh day..	10—1	History of Literature and Literary Criticism ...	175
Eighth day...	10—1	Inscriptions and South Indian History.	175
		Total ...	1,400

* The paper shall be the same as for the B.A. (Hons.) Degree Examination, Branch III—History.

BRANCH III (a)—ARABIC.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Pre-Islamic History ...	175
Second day...	10—1	Prose and Poetry Text-books ...	175
Third day ...	10—1	History of Arabic Language and Literature ...	175
Fourth day...	10—1	Prescribed Text-books (Asrar-al-Shariah) ...	175
Fifth day ...	10—1	Islamic Mysticism ...	175
Sixth day ...	10—1	Grammar and Comparative Philology.	175
Seventh day..	10—1	Essay ...	200
Eighth day...	10—1	Early Islamic History † ...	150
		Total ...	1,400

† In common with Branch III *(b)*.

BRANCH III (*b*)—PERSIAN.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in Prose ...	175
Second day...	10—1	Prescribed Text-books in Poetry ...	175
Third day ...	10—1	History of Language and Literature, Comparative Philology and Literary Criticism from the Earliest Times to the Mongol Period ...	175
Fourth day...	10—1	History of Language and Literature, Comparative Philology and Literary Criticism with special reference to Mongol Period of Iranian Literature	175
Fifth day ...	10—1	Persian Grammar, Prosody and Rhetoric ...	175
Sixth day ...	10—1	Essay in Persian ...	200
Seventh day.	10—1	Arabic Text-books and Grammar ...	175
Eighth day...	10—1	Early Islamic History † ...	150
		Total ...	1,400

† In common with Branch III (*a*).

BRANCH III (*c*)—URDU.

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	Prescribed Text-books in Prose ...	175
Second day...	10—1	The History of India * ...	150
Third day ...	10—1	Prescribed Text-books in Poetry ...	175
Fourth day...	10—1	History of Urdu Literature and Literary Criticism ...	175
Fifth day ...	10—1	Comparative Philology of Indo-Aryan Languages with special reference to the Development of Urdu Language...	175
Sixth day ...	10—1	Special Subject I ...	175
Seventh day..	10—1	Special Subject II ...	175
Eighth day...	10—1	Cognate Language—Arabic or Persian or Hindi ...	200
		Total ...	1,400

* The paper shall be the same as for the B. A. (Hons.) Degree Examination, Branch III—History.

Sangita Siromani

PRELIMINARY

Days.	Hours.	Subjects.	Marks.
		PART I	
First day ...	10— 1	Theory of Indian Music I (including Prescribed Classical Works) ...	100
Second day...	10— 1	Theory of Indian Music II (including the History of Indian Music) ...	100
		PART II	
Third day ...	10— 1	Language, I Paper ...	100
Fourth day...	10—12	Language, II Paper ...	100
		PART III	
Dates and hours will be notified later.		Practical (Main) ...	125
		Practical (Subsidiary) ...	75
		Total ...	600

FINAL

Days.	Hours.	Subjects.	Marks.
		PART I.	
First day ...	10—1	Theory of Indian Music I ...	100
Second day..	10—1	Theory of Indian Music II (including Prescribed Classical Works) ...	100
Third day ...	10—1	History of Indian Music ...	100
		PART II	
Dates and hours will be notified later.		Practical (Main) I ...	100
		Practical (Main) II ...	100
		Practical (Subsidiary) ...	100
		Total ...	600

B. Mus. Degree

PART I

Days.	Hours.	Subjects.	Marks.
		(i) *English.*	
First day ...	10—1	English Composition ...	100
Second day...	10—1	English Prose ...	100
		Total ...	200
		(ii) & (iii) (a) *Classical and Modern European Languages.*	
First day ...	10—1	Translation ...	100
Second day...	10—1	Prescribed Text-books ...	100
		Total ...	200
		(iii) (b) *Modern Indian Languages*	
First day ...	10—1	Translation ...	100
Second day...	10—1	Composition ...	100
		Total ...	200

PART II

Days.	Hours.	Subjects.	Marks.
First day ...	10—1	(a) History of Indian Music ...	100
Second day...	10—1	Theory of Indian Music I (including Prescribed Text-books)	100
Third day ...	10—1	Theory of Indian Music II (including Prescribed Text-books) ...	100
Fourth day...	10—1	(b) Special Subjects ...	100
		Total ...	400

PART III

Days.	Hours.	Subjects.	Marks.
Dates and hours will be notified later.		Practical (Main) I ...	100
		Practical (Main) II ...	100
		Practical (Subsidiary) ...	100
		Total ...	300